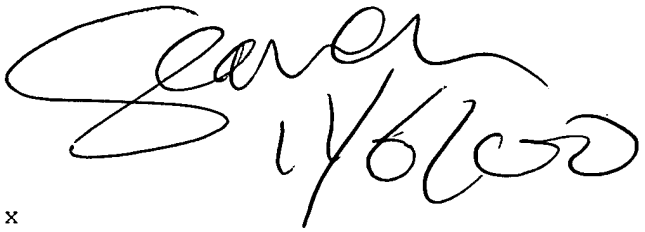

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FILE 'USPATFULL' ENTERED AT 11:31:47 ON 06 NOV 2000

=> s ink jet

L1 26253 INK JET

=> s l1 and (electrods or microelectrode)

L2 31 L1 AND (ELECTRODS OR MICROELECTRODE)

=> dup rem l2

PROCESSING COMPLETED FOR L2
L3 31 DUP REM L2 (0 DUPLICATES REMOVED)

=> d ibib kwic 1-

YOU HAVE REQUESTED DATA FROM 31 ANSWERS - CONTINUE? Y/(N):y

L3 ANSWER 1 OF 31 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:223606 CAPLUS
DOCUMENT NUMBER: 132:262401
TITLE: A method for forming microsensor device, and its use for evaluating a liquid function
INVENTOR(S): Fukushima, Hitoshi; Shimoda, Tatsuya; Morgan, Hywel
PATENT ASSIGNEE(S): Seiko Epson Corp., Japan; The University of Glasgow
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000097894	A2	20000407	JP 1998-273939	19980928

AB An efficient method is provided for evenly forming the mol.-recognizing membrane in a good quality on sensor electrodes within a short time. An efficient and rapid method is also provided for accurately introducing large no. of biol. samples to be detected and evaluated onto the multiple microsensor electrode dots formed. A high d. **microelectrode** is formed by applying a soln. contg. org. thin membrane material onto a required **microelectrode** surface through an injection nozzle by a microdot method in order to form the org. thin membrane on an electrode. A sample substance for sensing is evaluated by applying its soln. or the liq. substance itself onto the org. membrane surface on a **microelectrode** through an **ink jet** nozzle by a microdot method. Detailed description of the diagram depicting the procedures is given.

IT Conducting polymers
Liquids
Membrane electrodes
Microelectrodes
Microsensors

Thin film transistors
(method for forming microsensor device, and use for evaluating liq. function)

L3 ANSWER 2 OF 31 USPATFULL
ACCESSION NUMBER: 2000:70650 USPATFULL
TITLE: Delayed rectifier potassium channel subunit
INVENTOR(S): Hillman, Jennifer L., Mountain View, CA, United States
Patterson, Chandra, Mountain View, CA, United States
Corley, Neil C., Mountain View, CA, United States
PATENT ASSIGNEE(S): Incyte Pharmaceuticals, Inc., Palo Alto, CA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6071720	20000606
APPLICATION INFO.:	US 1998-69896	19980429 (9)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Achutamurthy, Ponnathapu
ASSISTANT EXAMINER: Mayhew, Bradley S.
LEGAL REPRESENTATIVE: Muenzen, Colette C.Incyte Pharmaceuticals, Inc.
NUMBER OF CLAIMS: 9
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 2372
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD A chemical coupling procedure and an **ink jet** device can be used to synthesize array elements on the surface of a substrate. (See, e.g., Baldeschweiler, supra.) An array. . .
DETD . . . analysis. Cells expressing DRPCS are dissociated from one another, and single cells are selected. Potassium currents are measured with a two-**microelectrode** voltage clamp. The standard extracellular recording solution is 80 mM NaCl, 5 mM KCl, 1.8 mM CaCl.sub.2, 1 mM MgCl.sub.2,. . .

L3 ANSWER 3 OF 31 USPATFULL
ACCESSION NUMBER: 2000:64730 USPATFULL
TITLE: Coagulation or lysis assays using an electroactive species
INVENTOR(S): Jina, Arvind N., Milpitas, CA, United States
PATENT ASSIGNEE(S): Hemosense, Inc., Milpitas, CA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6066504	20000523
APPLICATION INFO.:	US 1999-231731	19990115 (9)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1997-884027, filed on 27 Jun 1997
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Wallenhorst, Maureen M.
LEGAL REPRESENTATIVE: Gens, Timothy H.
NUMBER OF CLAIMS: 37
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 11 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 928
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD . . . can be applied to the test card using various types of micro-dispensing techniques which include, but is not limited to, **ink jet**, striper, and sprayer deposition methods, or dip coating and air dried in situ during the manufacturing process. In one such. . .
DETD . . . contains a source of tissue thromboplastin and was reconstituted with deionized water as required by the manufacturer, dispensed on a **microelectrode**, and partially air dryed. No additional additives like a preservative or surfactant was used. The

microelectrode was fabricated by Applied Graphics of Soquel, Calif. by printing a thin layer of silver to form the electrodes onto. . . alcohol prior to use. All tests were carried out at ambient temperature. Once the blood sample was applied to the **microelectrode** containing the Pt reagent, the clotting profile was manually recorded using a conventional conductivity meter connected to the contact pads. . .

L3 ANSWER 4 OF 31 USPATFULL

ACCESSION NUMBER:	2000:57617 USPATFULL
TITLE:	Method and device for measuring blood coagulation or lysis by viscosity changes
INVENTOR(S):	Jina, Arvind N., Milpitas, CA, United States
PATENT ASSIGNEE(S):	Hemosense, Inc., Milpitas, CA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6060323	20000509
APPLICATION INFO.:	US 1998-195842	19981119 (9)
RELATED APPLN. INFO.:	Continuation of Ser. No. US 1997-884027, filed on 27 Jun 1997	
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Wallenhorst, Maureen M.	
LEGAL REPRESENTATIVE:	Gens, Timothy H.	
NUMBER OF CLAIMS:	33	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	11 Drawing Figure(s); 5 Drawing Page(s)	
LINE COUNT:	1012	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . which can be applied to the test card using various-types of micro-dispensing techniques which include, but is not limited to, **ink jet**, striper, and sprayer deposition methods, or dip coating and air dried in situ during the manufacturing process. In one such. . .

DETD . . . contains a source of tissue thromboplastin and was reconstituted with deionized water as required by the manufacturer, dispensed on a **microelectrode**, and partially air dryed. No additional additives like a preservative or surfactant was used. The **microelectrode** was fabricated by Applied Graphics of Soquel, Ca. by printing a thin layer of silver to form the electrodes onto. . . alcohol prior to use. All tests were carried out at ambient temperature.

Once the blood sample was applied to the **microelectrode** containing the Pt reagent, the clotting profile was manually recorded using a conventional conductivity meter connected to the contact pads. . .

L3 ANSWER 5 OF 31 USPATFULL

ACCESSION NUMBER:	2000:40896 USPATFULL
TITLE:	Method and device for measuring blood coagulation or lysis by viscosity changes
INVENTOR(S):	Jina, Arvind N., Milpitas, CA, United States
PATENT ASSIGNEE(S):	Hemosense, Inc., San Jose, CA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6046051	20000404
APPLICATION INFO.:	US 1997-884027	19970627 (8)
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Wallenhorst, Maureen M.	
LEGAL REPRESENTATIVE:	Gens, Timothy H.Trial & Technology Law Group	
NUMBER OF CLAIMS:	17	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	11 Drawing Figure(s); 6 Drawing Page(s)	

LINE COUNT: 945
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD . . . can be applied to the test card using various types of micro-dispensing techniques which include, but is not limited to, **ink jet**, striper, and sprayer deposition methods, or dip coating and air dried in situ during the manufacturing process. In one such. . .
DETD . . . contains a source of tissue thromboplastin and was reconstituted with deionized water as required by the manufacturer, dispensed on a **microelectrode**, and partially air dryed. No additional additives like a preservative or surfactant was used. The **microelectrode** was fabricated by Applied Graphics of Soquel, Calif. by printing a thin layer of silver to form the electrodes onto. . . alcohol prior to use. All tests were carried out at ambient temperature. Once the blood sample was applied to the **microelectrode** containing the Pt reagent, the clotting profile was manually recorded using a conventional conductivity meter connected to the contact pads. . .

L3 ANSWER 6 OF 31 USPATFULL
ACCESSION NUMBER: 2000:21384 USPATFULL
TITLE: Methods and compositions for enhancing sensitivity in the analysis of biological-based assays
INVENTOR(S): Ness, Jeffrey Van, Seattle, WA, United States
Tabone, John C., Bothell, WA, United States
Howbert, J. Jeffry, Bellevue, WA, United States
Mulligan, John T., Seattle, WA, United States
PATENT ASSIGNEE(S): Rapigene, Inc., Bothell, WA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6027890	20000222
APPLICATION INFO.:	US 1997-898501	19970722 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1997-787521, filed on 22 Jan 1997, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	US 1996-10436	19960123 (60)
	US 1996-15402	19960321 (60)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Houtteman, Scott W.
LEGAL REPRESENTATIVE: Seed and Berry LLP
NUMBER OF CLAIMS: 72
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 19 Drawing Figure(s); 19 Drawing Page(s)
LINE COUNT: 6333
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD . . . 87:1663, 1990) probes from single cells. After electrical recordings, the cytoplasmic contents of a single cell were aspirated with patch-clamp **microelectrodes** for in situ cDNA synthesis and amplification. PCR was used to amplify cDNA of selective glutamate receptor mRNAs from single. . .
DETD . . . by any of the number of techniques currently used in microfabrication. For example, the solutions may be placed into an **ink jet** print head, and ejected from such a head onto the coating.

L3 ANSWER 7 OF 31 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:537050 CAPLUS
TITLE: Applications of biochip and microarray systems in pharmacogenomics
AUTHOR(S): Jain, K. K.
CORPORATE SOURCE: Jain PharmaBiotech, Basel, CH-4057, Switz.
SOURCE: Pharmacogenomics (2000), 1(3), 289-307

CODEN: PARMFL; ISSN: 1462-2416
PUBLISHER: Ashley Publications Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 43
REFERENCE(S): (1) Arlinghaus, H; Anal Chem 1997, V69, P3747 CAPLUS
(2) Beier, M; Nucleic Acids Res 2000, V28, PE11 CAPLUS
(3) Billinton, N; Biosens Bioelectron 1998, V13(7-8), P831 CAPLUS
(4) Braxton, S; Curr Opin Biotechnol 1998, V9, P643 CAPLUS
(5) Cheng, J; Nature Biotech 1998, V16, P541 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB A DNA microarray system is usually comprised of DNA probes formatted on a microscale on a glass surface (chip), plus the instruments needed to handle samples (automated robotics), to read the reporter mols. (scanners) and analyze the data (bioinformatic tools). Biochips are formed by in situ (on chip) synthesis of oligonucleotides or peptide nucleic acids (PNAs) or spotting of DNA fragments. Hybridization of RNA- or DNA-derived samples on chips allows the monitoring of expression of mRNAs or the occurrence of polymorphisms in genomic DNA. Basic types of DNA chips are the sequencing chip, the expression chip and chips for comparative genomic hybridization. Advanced technologies used in automated microarray prodn. are photolithog., mech. microspotting and **ink jets**. Bioelectronic microchips contain numerous electronically active **microelectrodes** with specific DNA capture probes linked to the electrodes through mol. wires. Several biosensors have been used in combination with biochips. PNA biosensors commonly rely on the immobilization of a single-stranded DNA sequence (the "probe") onto a transducer surface for hybridization with the complementary ("target") strand to give a suitable elec. signal. Other sensors are cell-based immunobiosensors with engineered mol. recognition, integrated biosensors based on phototransistor integrated circuits and sensors based on surface plasmon resonance. Microarray technologies offer enormous savings in time and labour as compared to std. gel-based microsatellite methods. Reading of the information and its management by bioinformatics is necessary because of the enormous amt. of data generated by the various technologies using microarrays. Standardised procedures are essential for compatible data prodn., quality control and anal. Expression monitoring is the most biol. informative application of this technol. at present. Microarray technol. has important applications in pharmacogenomics:. Drug discovery and development, drug safety and mol. diagnostics. DNA chips will facilitate the integration of diagnosis and therapeutics, as well as the introduction of personalised medicines.

L3 ANSWER 8 OF 31 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:249048 CAPLUS
DOCUMENT NUMBER: 130:264419
TITLE: **Ink-jet** printing in manufacture of microsensor devices
INVENTOR(S): Fukushima, Hitoshi; Shimoda, Tatsuya; Morgan, Hywel
PATENT ASSIGNEE(S): Seiko Epson Corporation, Japan; The University Court of the University of Glasgow
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 908725	A1	19990414	EP 1998-307968	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2248517	AA	19990330	CA 1998-2248517	19980930

PRIORITY APPLN. INFO.: JP 1997-266225 19970930

REFERENCE COUNT: 8

REFERENCE(S):

(1) Boeegh, P; WO 8905567 A 1989

(2) Boehringer Mannheim Gmbh; EP 0469445 A 1992

(3) Ecossensors Ltd; WO 9108474 A 1991

(5) O'Donnell-Maloney, M; GENETIC ANALYSIS: BIOMOLECULAR ENGINEERING 1996, V13(6), P151 CAPLUS

(6) Plotkin; CLINICAL CHEMISTRY 1997, V43(11), P2187 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI **Ink-jet** printing in manufacture of microsensor devices

AB An object of this invention is to provide a method of forming mol. recognizing films on sensor electrodes efficiently, within a short period of time, uniformly, and in a high quality state. Another object of this invention is to provide a method of accurately and efficiently introducing a vast no. of biol. samples for evaluation to the plural minute sensor electrode dots within a short period of time. In order to form org. thin films on electrodes, a soln. of a material for the org. thin film is accurately printed via an **ink-jet** onto the surface of **microelectrodes** as required, thereby producing a high d. array of **microelectrodes**. Further, a soln. of a sample substance or a liq. substance to be sensed is ejected into air via an **ink-jet** nozzle to fall to the surface of org. thin membranes on the **microelectrodes** so that the sample is evaluated.

ST microsensor manuf **ink jet** printing

IT Solvents
(electroconductive polymer in, **ink-jet** printing of; **ink-jet** printing in manuf. of microsensor devices)

IT Polymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electroconductive, in solvent, **ink-jet** printing of; **ink-jet** printing in manuf. of microsensor devices)

IT Plastics, uses
RL: DEV (Device component use); USES (Uses)
(electrodes and elec. circuit formed on substrate of; **ink-jet** printing in manuf. of microsensor devices)

IT Thiols (organic), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in prepn. of electrodes with thin films of gold; **ink-jet** printing in manuf. of microsensor devices)

IT Biochemical molecules
Ink-jet printing
Microelectrodes
Microsensors
(**ink-jet** printing in manuf. of microsensor devices)

IT Antibodies
DNA
Proteins (general), analysis
RL: ANT (Analyte); ANST (Analytical study)
(**ink-jet** printing in manuf. of microsensor devices)

IT Films
(org. thin; **ink-jet** printing in manuf. of microsensor devices)

IT Transistors
(polysilicone thin film; **ink-jet** printing in manuf.

of microsensor devices)
IT Polysiloxanes, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(surface-modifying agent based on, **ink-jet** printing of; **ink-jet** printing in manuf. of microsensor devices)
IT 7440-57-5, Gold, uses
RL: DEV (Device component use); USES (Uses)
(electrodes with thin films of; **ink-jet** printing in manuf. of microsensor devices)

L3 ANSWER 9 OF 31 USPATFULL

ACCESSION NUMBER:	1999:27048 USPATFULL		
TITLE:	Electrochemical oxygen sensor		
INVENTOR(S):	McAleer, Jerry, Oxon, England Ackland, Martin, Oxon, England		
PATENT ASSIGNEE(S):	Cranfield Biotechnology Ltd., England (non-U.S. corporation)		
	NUMBER	DATE	
PATENT INFORMATION:	US 5876577	19990302	
	WO 9610174	19960404	
APPLICATION INFO.:	US 1997-809627	19970923	(8)
	WO 1995-GB2299	19950928	
		19970923	PCT 371 date
		19970923	PCT 102(e) date
	NUMBER	DATE	
PRIORITY INFORMATION:	GB 1994-19513	19940928	
DOCUMENT TYPE:	Utility		
PRIMARY EXAMINER:	Bell, Bruce F.		
LEGAL REPRESENTATIVE:	Beyer & Weaver, LLP		
NUMBER OF CLAIMS:	9		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	9 Drawing Figure(s); 4 Drawing Page(s)		
LINE COUNT:	289		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . fabricated as micro-electrode arrays as disclosed in WO91/08474. The active area of the sensor may be manufactured by printing or **ink jet** methods and appropriate layers may be applied as described below so that the sensor can detect oxygen and reducible species. . .

SUMM A variety of techniques may be used to form the electrodes, including printing, for example screen printing, lithography, **ink jet** and flexographic printing. Various coating methods for example dipping, spraying, spin coating and dosing may also be employed.
Distortion printing. . .

DETD . . . Any number of selective layers may be employed. The selective layers 8 to 11 can be deposited by screen printing, **ink jets**, spray, airbrush dipping or dosing techniques. Alternative techniques can be employed. The selective layers may have a variety of compositions.

DETD FIGS. 5 and 6 show the use of **microelectrodes** 12 in an array 13. The **microelectrodes** can vary in size and diameter for example having a dimension of 20 .mu.m. Such **microelectrodes** may be formed by laser ablation as disclosed in WO91/08474, the disclosure of which is incorporated into this specification by reference. Use of **microelectrodes** affords the benefit that the amount of reducible material consumed during the measurement is minimised enabling continuous measurement without perturbation. . . in the analyte. The number and dimensions of the electrodes may be selected in accordance with the performance characteristics required.

Microelectrodes 12 may extend through the insulating layer 5 to the active layer to form an array 13. A **microelectrode** array may be coated with overlayers of selected materials (not shown) as previously described. The conductive layers 2 may be. . .

L3 ANSWER 10 OF 31 USPATFULL

ACCESSION NUMBER:	1998:143859 USPATFULL
TITLE:	Process for the manufacture of wholly microfabricated biosensors
INVENTOR(S):	Cozzette, Stephen N., Nepean, Canada Davis, Graham, Plainsboro, NJ, United States Lauks, Imants R., Yardley, PA, United States Mier, deceased, Randall M., late of Morrisvile, PA, United States by James F. Corrigan, executor Piznik, Sylvia, Jackson, NJ, United States Smit, Nicolaas, Hightstown, NJ, United States Van Der Werf, Paul, Princeton Junction, NJ, United States Wieck, Henry J., Plainsboro, NJ, United States Steiner, Susan, Trenton, NJ, United States Itak, Jeanne, West Windsor, NJ, United States
PATENT ASSIGNEE(S):	i-STAT Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5837454	19981117
APPLICATION INFO.:	US 1995-484095	19950607 (8)
RELATED APPLN. INFO.:	Division of Ser. No. US 1992-943345, filed on 10 Sep 1992, now patented, Pat. No. US 5466575 which is a division of Ser. No. US 1989-432714, filed on 7 Nov 1989, now patented, Pat. No. US 5200051 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned	
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Chin, Christopher L.	
LEGAL REPRESENTATIVE:	Pennie & Edmonds LLP	
NUMBER OF CLAIMS:	34	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	24 Drawing Figure(s); 18 Drawing Page(s)	
LINE COUNT:	4445	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM 2.2.3. **Ink Jet** Methods

SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .

SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .

SUMM 2.2.3. **INK JET** METHODS

SUMM . . . on an integrated ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A film-forming latex, ELVACE.TM., (poly)(vinyl)latex), containing a

potassium chloride reference solution, has been applied over a reference
microelectrode for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on EIectrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .
DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 11 OF 31 USPATFULL

ACCESSION NUMBER:	1998:143851 USPATFULL
TITLE:	Process for the manufacture of wholly microfabricated biosensors
INVENTOR(S):	Cozzette, Stephen N., Nepean, Canada Davis, Graham, Plainsboro, NJ, United States Itak, Jeanne, West Windsor, NJ, United States Lauks, Imants R., Yardley, Canada Piznik, Sylvia, Jackson, NJ, United States Smit, Nicolaas, Hightstown, NJ, United States Steiner, Susan, Trenton, NJ, United States Van Der Werf, Paul, Princeton Junction, NJ, United States Wieck, Henry J., Plainsboro, NJ, United States Mier, deceased, Randall M., late of Morrisville, PA, United States by James F. Corrigan, executor
PATENT ASSIGNEE(S):	i-STAT Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5837446	19981117
APPLICATION INFO.:	US 1995-482517	19950607 (8)
RELATED APPLN. INFO.:	Division of Ser. No. US 1992-943345, filed on 10 Sep 1992, now patented, Pat. No. US 5466575 which is a division of Ser. No. US 1989-432714, filed on 7 Nov 1989, now patented, Pat. No. US 5200051 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned	
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Chin, Christopher L.	
LEGAL REPRESENTATIVE:	Pennie & Edmonds LLP	
NUMBER OF CLAIMS:	35	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	24 Drawing Figure(s); 18 Drawing Page(s)	
LINE COUNT:	4704	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are
presently made individually or in certain cases by. . .
SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .
.
SUMM 2.2.3. **INK JET** METHODS
SUMM . . . on an integrated ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from
20

to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A film-forming latex, ELVACE.TM., (poly(vinyl)latex), containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .

DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 12 OF 31 USPATFULL

ACCESSION NUMBER: 96:82417 USPATFULL

TITLE: Process for the manufacture of wholly microfabricated biosensors

INVENTOR(S): Cozzette, Stephen N., Nepean, Canada
Davis, Graham, Plainsboro, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, Randall M., Morrisvile, PA, United States
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United States
Wieck, Henry J., Plainsboro, NJ, United States

PATENT ASSIGNEE(S): i-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5554339	19960910
APPLICATION INFO.:	US 1993-109507	19930819 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1992-943345, filed on 10 Sep 1992, now patented, Pat. No. US 5466575 which is a division of Ser. No. US 1989-432714, filed on 7 Nov 1989, now patented, Pat. No. US 5200051 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Jones, W. Gary
ASSISTANT EXAMINER: Marschel, Ardin H.
LEGAL REPRESENTATIVE: Pennie & Edmonds
NUMBER OF CLAIMS: 63
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT: 4666
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM 2.2.3. **Ink Jet** Methods

SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .

SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. . .

SUMM 2.2.3. **INK JET** METHODS

SUMM . . . on an integrted ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink**

jet nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A-film-forming latex, ELVACE.TM., a poly(vinyl) latex, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Eletrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .

DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 13 OF 31 USPATFULL

ACCESSION NUMBER: 96:72619 USPATFULL
TITLE: Rapid prototype three dimensional stereolithography
INVENTOR(S): Bae, Young C., Pleasanton, CA, United States
Soane, David S., Piedmont, CA, United States
Crocker, Charles, San Francisco, CA, United States
PATENT ASSIGNEE(S): Soane Technologies, Inc., Hayward, CA, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5545367	19960813
APPLICATION INFO.:	US 1993-68692	19930527 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1993-59128, filed on 7 May 1993 And a continuation-in-part of Ser. No. US 1992-869480, filed on 15 Apr 1992, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	WO 1993-US3544	19930415

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Heitbrink, Jill L.
LEGAL REPRESENTATIVE: Zalesky, Cheryl K.Kilpatrick & Cody
NUMBER OF CLAIMS: 7
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 18 Drawing Figure(s); 15 Drawing Page(s)
LINE COUNT: 1295
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD In another embodiment, microbubble technology used in **ink-jet** printing is used to create the photomask. **Microelectrodes** can be positioned in a liquid filled cylinder, and light passed through the cylinder while the electrodes are heated. Upon. . .

L3 ANSWER 14 OF 31 USPATFULL

ACCESSION NUMBER: 95:103133 USPATFULL
TITLE: Colloidal-gold electrosensor measuring device
INVENTOR(S): Wegner, Steven, Chapel Hill, NC, United States
Harpold, Michael A., Durham, NC, United States
McCaffrey, Terence M., Durham, NC, United States
Morris, Susan E., Chapel Hill, NC, United States
Wojciechowski, Marek, Cary, NC, United States
Zhao, Junguo, Chapel Hill, NC, United States
Henkens, Robert W., Durham, NC, United States
Naser, Najih, Durham, NC, United States
O'Daly, John P., Carrboro, NC, United States
PATENT ASSIGNEE(S): Andcare, Inc., Durham, NC, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5468366	19951121
APPLICATION INFO.:	US 1994-316433	19940930 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1993-73806, filed on 7 Jun 1993, now patented, Pat. No. US 5368707 which is a continuation-in-part of Ser. No. US 1992-821732, filed on 15 Jan 1992, now patented, Pat. No. US 5217594, issued on 8 Jun 1993

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Niebling, John
ASSISTANT EXAMINER: Bell, Bruce F.
LEGAL REPRESENTATIVE: Arnold, White & Durkee
NUMBER OF CLAIMS: 22
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 9 Drawing Page(s)
LINE COUNT: 1059
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB . . . invention provides a rapid, reliable, portable and inexpensive means of detecting low lead levels. The colloidal gold modified electrodes have **microelectrode** array characteristics and produce significantly higher stripping detection signals for lead than are produced at bulk gold electrode surfaces. The. . .

SUMM . . . In addition, coulometric stripping signals offer better discrimination against electronic noise, a feature that is particularly beneficial for measurements involving **microelectrode** arrays. A particular advantage for a rugged, simple, portable device (such as the lead sensor of the present invention) is. . .

SUMM . . . of colloidal gold sol mixed with poly(ester-sulfonic acid) polymer onto the surface of the working electrodes by techniques such as **ink-jet** printing, volumetric deposition, and air brush spraying provides better reproducibility and eliminates waste of reagents due to the non-contact nature. . .

SUMM . . . way indicating a limitation to the invention, it is believed that a colloidal gold modified carbon surface acts as a **microelectrode** array. This is evidenced by the inventors' observation that the lead signal charge density in very small volume samples, without. . .

SUMM A further advantage of a colloidal gold modified carbon electrode acting as a **microelectrode** array is increased efficiency of mass transport of lead ions to the **microelectrode** surface during deposition. This allows deposition of sufficient amounts of lead for subsequent stripping in a relatively short period of. . .

SUMM . . . carbon electrodes. Controlled deposition is possible because colloidal gold sols are readily compatible with well-developed liquid handling techniques such as **ink-jet** printing, volumetric deposition, and air brush spraying. Devices used in these techniques are capable of measuring a quantitative volume of. . .

DETD . . . electrochemical properties of the colloidal gold modified electrodes developed by the inventors. The colloidal gold modified electrodes act as a **microelectrode** array. For the same geometric area, the stripping detection signal of a **microelectrode** array is greater than the stripping detection signal for a planar electrode.

DETD The response of **microelectrode** arrays has three regimes of scanning frequency dependence. The divisions between the regimes depends on the analyte diffusion distance relative to the radius of the individual **microelectrodes** and the separation between the individual **microelectrodes**. In high frequency scans, analyte diffusion distance is small compared to **microelectrode** radius. Signal is limited by the aggregate area of the **microelectrodes** and is proportional to the square root of frequency. In low frequency

scans, analyte diffusion distances to the individual **microelectrodes** overlap. Signal is limited by the macroscopic geometric area of the array and is proportional to the square root of frequency. In between frequency scan extremes analyte diffusion distances are not small compared to **microelectrode** radius but do not overlap the individual **microelectrodes**. Signal response is in a steady-state and essentially is independent of frequency.

DETD . . . exhibits mixed behavior at the boundaries of these regions. The frequency positions of the boundaries give information about the average **microelectrode** radius and the average distance of separation of the **microelectrodes**. At a frequency of 1 Hz the disclosed colloidal gold modified electrode exhibited a steady-state response to 1 ppm lead. . . Hz. Exploration of the steady state frequency boundaries of the disclosed colloidal gold modified electrodes provided an to estimate of **microelectrode** size (radius=1.5.times.10.sup.-3 cm), **microelectrode** number (9.times.10.sup.4), and distance of separation of the **microelectrodes** (1.2.times.10.sup.-3). The sensitivity of the electrode under the instrumental conditions used in this example is represented by:

DETD Additional evidence to support the **microelectrode** array behavior of the disclosed colloidal gold modified carbon electrode was obtained by examining the dependence between the SWC signal. . . pattern of the transport of lead ions to the electrode surface during the deposition step, which is characteristic of the **microelectrode** array behavior. A square root dependence between the signal and the deposition time would be expected for a macroelectrode in. . .

DETD . . . diffusion plateau well above. This shows that under the conditions of relatively fast SWV the disclosed electrodes acted as a **microelectrode** array.

CLM What is claimed is:

. . . electrode comprising colloidal gold dispersed in a cationic polymer matrix that is deposited onto an electrode surface to form a **microelectrode** array.

7. The **microelectrode** array of claim 6 wherein the cationic polymer is poly(ester-sulfonic acid).

8. The **microelectrode** array of claim 6 wherein the electrode surface is screen printed carbon ink or glassy carbon.

9. The **microelectrode** array of claim 6 wherein size of the colloidal gold is between about 200 and 500 angstroms in diameter.

. . . levels, comprising the steps: contacting a sample suspected of containing lead ion with the electrode of claim 1 or the **microelectrode** array of claim 6; reductively plating metallic lead onto the electrode surface; stripping the plated lead from the electrode surface. . .

L3 ANSWER 15 OF 31 USPATFULL

ACCESSION NUMBER: 95:101109 USPATFULL

TITLE: Process for the manufacture of wholly microfabricated biosensors

INVENTOR(S): Cozzette, Stephen N., Nepean, Canada
Davis, Graham, Plainsboro, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, Randall M., Morrisvile, PA, United States
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United States

Wieck, Henry J., Plainsboro, NJ, United States
PATENT ASSIGNEE(S): i-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5466575	19951114
APPLICATION INFO.:	US 1992-943345	19920910 (7)
DISCLAIMER DATE:	20081105	

RELATED APPLN. INFO.: Division of Ser. No. US 1989-432714, filed on 7 Nov 1989, now patented, Pat. No. US 5200051 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Saunders, David
ASSISTANT EXAMINER: Chi, Christopher L.
LEGAL REPRESENTATIVE: Pennie & Edmonds
NUMBER OF CLAIMS: 51
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT: 4561
SUMM 2.2.3. **Ink Jet** Methods
SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .
SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32, 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .
.
SUMM 2.2.3. **INK JET** METHODS
SUMM . . . on an integrated ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.
SUMM A film-forming latex, ELVACE.TM., (poly(vinyl)latex), containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .
DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 16 OF 31 USPATFULL
ACCESSION NUMBER: 93:87474 USPATFULL
TITLE: Piperdinyl and piperazinyl derivatives
INVENTOR(S): Butera, John A., Kendall Park, NJ, United States
Bagli, Jehan F., Princeton, NJ, United States
Ellingboe, John W., Princeton, NJ, United States
PATENT ASSIGNEE(S): American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE

PATENT INFORMATION: US 5254689 19931019
APPLICATION INFO.: US 1992-957568 19921007 (7)
RELATED APPLN. INFO.: Division of Ser. No. US 1992-841922, filed on 25 Feb 1992, now patented, Pat. No. US 5202346
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Tsang, Cecilia
LEGAL REPRESENTATIVE: Jackson, Richard K.
NUMBER OF CLAIMS: 6
EXEMPLARY CLAIM: 1
LINE COUNT: 605
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers and Ag/AgCl half-cells used as reference electrodes. The. . .
DETD . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded on an **ink-jet** recorder. The diastolic blood pressure (BP) and heart rate (HR) were determined before and after each trial.

L3 ANSWER 17 OF 31 USPATFULL
ACCESSION NUMBER: 93:82756 USPATFULL
TITLE: Use of conductive sensors in diagnostic assays
INVENTOR(S): Musho, Matthew K., Elkhart, IN, United States
Noell, J. Oakey, Mishawaka, IN, United States
Tse, Pius H-S., Mishawaka, IN, United States
PATENT ASSIGNEE(S): Miles Inc., Elkhart, IN, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5250439	19931005
APPLICATION INFO.:	US 1992-990340	19921214 (7)

RELATED APPLN. INFO.: Division of Ser. No. US 1991-793180, filed on 18 Nov 1991, now patented, Pat. No. US 5202261
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Housel, James C.
ASSISTANT EXAMINER: Trembley, Theresa A.
LEGAL REPRESENTATIVE: Jeffers, Jerome L.
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 9 Drawing Page(s)
LINE COUNT: 2300
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . interacts with the predetermined analyte and a detection zone including a layer or film of a conducting polymer and a **microelectrode** assembly. More particularly, a diagnostic device is employed to selectively assay a test sample for the presence or concentration of. . .
SUMM . . . In addition, the diagnostic device further comprises a detection zone including a film or layer of conducting polymer and a **microelectrode** assembly. The change in conductivity of the conducting polymer layer as a result of the dopant compound is detected or measured by the **microelectrode** assembly. The change in conductivity then is correlated to the amount of predetermined analyte in the test sample. As will. . . analyte; can be manufactured by well-known semiconductor processing techniques; and does not rely upon a chemical reaction occurring at the **microelectrode** assembly.
SUMM . . . the layer of conducting polymer. The change in conductivity of the conducting polymer then is detected or measured by a **microelectrode** assembly, and can be correlated to the concentration of the predetermined analyte in the test sample.
SUMM . . . and to generate a dopant compound. The detection zone includes a film or layer of a conducting polymer and a **microelectrode**

assembly such that the dopant compound can migrate to the detection zone
to dope the conducting polymer, and such that the resulting change in conductivity, detected and measured by the **microelectrode** assembly, can be correlated to the amount of predetermined analyte in the test sample. The conductive sensor overcomes the disadvantages. . .

SUMM . . . analyte sensor comprising a reaction zone and a detection zone,
wherein the detection zone includes a conducting polymer and a **microelectrode** assembly. More particularly, the present invention is directed to a conductive sensor that allows the sensitive and accurate detection and. . . polymer layer is changed, and the change in conductivity of the conducting polymer layer is detected and measured by the **microelectrode** assembly and is correlated to the concentration of the predetermined analyte in the test sample.

SUMM . . . of the dopant compound into the conducting polymer layer, and the measurable conductivity change is detected and measured by a **microelectrode** assembly in the detection zone and is correlated to the concentration of the predetermined analyte in the test sample.

SUMM . . . and the concentration of the predetermined analyte is determined from the change in conductivity of the conducting polymer by a **microelectrode** assembly in the detection layer. Thus, to provide an accurate and sensitive assay by eliminating oxygen limitation
problems in the. . .

SUMM . . . in the conductivity of the conducting polymer; measuring the change in conductivity of the layer of conducting polymer by a **microelectrode** assembly present in the detection zone; and correlating the change in conductivity of the layer of conducting polymer to the. . .

SUMM . . . zone in contact with the reaction zone including a layer or film of a conducting polymer in contact with a **microelectrode** assembly, such that the dopant compound generated in the reaction zone can migrate to and oxidatively dope the film or layer of the conducting polymer; and c) means operatively connected to the **microelectrode** assembly of the detection zone for measuring the conductivity of the conducting polymer.

SUMM . . . zone in contact with the reaction zone including a layer or film of a conducting polymer in contact with a **microelectrode** assembly, such that the dopant compound generated in the reaction zone can migrate to and oxidatively dope the film or layer of the conducting polymer; and d) means operatively connected to the **microelectrode** assembly of the detection zone for measuring the conductivity of the conducting polymer.

SUMM . . . comprising a detection zone comprising a layer, such as a thin film, of a conducting polymer in contact with a **microelectrode** assembly capable of measuring resistances as high as about 10.sup.9 ohms.

DRWD . . . zone by measuring the change in conductivity of a layer of conducting polymer present in the detection zone with a **microelectrode** assembly;

DRWD FIG. 2 is a top view of a **microelectrode** assembly included in the detection zone of the present invention showing the interdigited **microelectrodes** and the spacing, or gap, between the interdigited **microelectrodes** filled with the conducting polymer;

DETD . . . a reaction zone and a detection zone, wherein the detection zone includes a layer of a conducting polymer and a **microelectrode** assembly, to determine the presence or concentration of a predetermined analyte in a liquid test sample. Although conductive sensors have. . .

DETD . . . with reaction zone 14 (FIG. 1c). The detection zone includes a film or layer of conducting polymer 16 and a **microelectrode** assembly 20. The top surface of the film of conducting polymer 16 is in contact with the reaction zone 14, and the bottom surface of the

conducting polymer 16 is in contact with the **microelectrode** assembly 20. In general, in the detection zone, the molecular iodine oxidatively dopes the film or layer of conducting polymer. . . film or layer of conducting polymer 16 increases. A conductometric measurement is made under a constant applied potential between two **microelectrodes** present in the **microelectrode** assembly 20 of the detection zone, and the increase, or the rate of increase, of the conductivity of the film. . .

DETD . . . the molecular iodine is included in the detection zone as a film or layer positioned in laminar contact with the **microelectrode** assembly 20. In particular, the **microelectrode** assembly 20 includes an interdigited pair of metal electrodes with an insulating spacing of from about 5.mu. to about 300.mu.,. . . metal electrodes has as small an insulating spacing as possible, such as from about 5.mu. to about 15 v. The **microelectrode** assembly 20 can be any electrode assembly capable of measuring a conductivity in the range of from about 10.sup.-7 S/cm. . . S/cm of a film or layer of conducting polymer 16 approximately 100.ANG. to approximately 1500.ANG. in thickness. Although a suitable **microelectrode** assembly 20 can be any one of a variety of configurations, an especially suitable configuration is illustrated in FIG. 2,. . .

DETD In particular, the **microelectrode** assembly 30 illustrated in FIG. 2 comprises a base 32 of a smooth, nonconductive material, like silicon metal, ceramic or. . . vias (not shown) incorporated into the base 32. The interdigited patterns of conductive material 34 and 36 serve as the **microelectrodes** of the **microelectrode** assembly of the conductive sensor. Therefore, when a layer or film of conducting polymer is applied to the **microelectrode** assembly 30, the film or layer of conducting polymer bridges, or fills, the gap 38 between the interdigited patterns of. . . a change in conductivity of the layer or film of conducting polymer in the gap 38 is detected by the **microelectrodes** comprising the interdigited patterns of conductive material 34 and 36. The manufacture of a **microelectrode** assembly 30 will be discussed more fully hereinafter.

DETD In further regard to FIG. 1, in addition to the **microelectrode** assembly 20, another essential component in the detection zone of the conductive sensor is a thin, uniform layer or film. . .

DETD . . . chemical identity of the conducting polymer, the thickness of the layer or film of conducting polymer 16 applied onto the **microelectrode** assembly 20 is important because the thickness of the layer or film of conducting polymer 16 is directly related to. . .

DETD . . . conducting polymer 16 can be utilized as long as the gap between the interdigited patterns of conductive material in the **microelectrode** assembly 20 is bridged, or filled, with the conducting polymer and as long as the interdigited patterns of conductive material. . .

DETD . . . thin polymer layers, or films, onto a substrate. These processing techniques include batch process techniques like spin coating, film casting, **ink jet** printing and similar batch process techniques. In particular, spin coating is a preferred method of depositing a layer or film. . .

DETD . . . addition to the particular chemical and physical properties required of the film or layer of conducting polymer 16 and the **microelectrode** assembly 20 in the detection zone of the conductive sensor of the test device 10 in FIG. 1, the reaction. . .

DETD . . . test device 10. The change in conductivity of the layer or film of conducting polymer 16 is measured by the **microelectrode** assembly 20 and can be correlated to the amount of predetermined analyte

in the test sample by comparison to the. . .

DETD . . . 44 in laminar contact with a detection zone including a film or layer of a conducting polymer 46 and a **microelectrode** assembly 50 that are essentially identical to the reaction zone 14 and the detection zone of the conductive sensor of. . .

DETD . . . to the migration rate of the predetermined analyte through semipermeable membrane 42. The increase in conductivity is detected by a **microelectrode** assembly 50 that is in contact with the layer or film of conducting polymer 46. Therefore, the concentration of the. . .

DETD . . . used in an assay for glucose. The test device included a conductive sensor 40 illustrated in FIG. 2. First, the **microelectrode** assembly 50 of FIG. 3, and more fully illustrated as the **microelectrode** assembly 30 in FIG. 2, was prepared. Accordingly, a wafer or layer of a smooth, nonconductive material, for example, but. . . limited to, silicon, ceramic, teflon, polycarbonate, polypropylene, kevlar, chrome-treated glass and glass, was used as the base 32 of the **microelectrode** assembly 30 in FIG. 2 for the subsequent deposition of the interdigited patterns of conductive material 34 and 36.

DETD Therefore, a test device of the present invention utilizes a smooth and nonconductive base for the **microelectrode** assembly, wherein the top, or sensing, surface of the **microelectrode** assembly includes an interdigited metal pattern, like a gold pattern, printed onto the base of the **microelectrode** assembly by procedures well known in the art. Electrical contact to the top sensing surface of the **microelectrode** assembly is accomplished by gold vias to the back surface of the base of the **microelectrode** assembly. Large gold contact pads positioned on the back surface of the base of the **microelectrode** assembly provide an electrical connection to detection instruments, such as a conductivity meter. This particular configuration isolates the top, sensing surface of the **microelectrode** assembly from the contact pads on the bottom surface of the base of the **microelectrode** assembly, and therefore avoids making an electrical contact to detection instruments through the chemical layers of the reaction zone and detection zone that subsequently are positioned over the top sensing surface of the **microelectrode** assembly.

DETD Accordingly, after manufacturing a **microelectrode** assembly, a layer or film of conducting polymer, from about 100.ANG. to about 10,000.ANG. in thickness, is deposited in the. . .

DETD Therefore, onto the top sensing surface of the **microelectrode** assembly is positioned a layer or film of a suitable conducting polymer.

As stated previously, a suitable conducting polymer provides. . . the conducting polymer should be stable and easy to process such that the conducting polymer can be applied to the **microelectrode** assembly as a uniform, thin film or layer by spin coating, film casting, jet printing or a similar application technique. . .

DETD . . . properties, such as solubility in organic solvents, to provide a thin, uniform layer or film of conducting polymer on the **microelectrode** assembly. As previously discussed, the conducting polymer can be admixed with nonconducting polymers, or the conducting polymer can be a. . .

DETD Before applying the solution of the conducting polymer to the **microelectrode** assembly, the **microelectrode** assembly is cleaned with a solvent, like chloroform, by washing the **microelectrode** assembly, then spinning the electronic template dry on a PHOTO-RESIST SPINNER, available from Headway Research Inc., Garland, Tex. With the **microelectrode** assembly at rest on the spinner, the top sensing surface of the **microelectrode**

assembly is flooded with the conducting polymer-xylene solution and then
spun to dryness at 3000 rpm for approximately 20 seconds. . .
DETD . . . 7, fully-assembled test devices were tested by applying a 0.1 volt potential across the two isolated interdigited electrodes in the **microelectrode** assembly and measuring the increase in conductivity of the film or layer of conducting polymer as the conducting polymer is. . .
DETD . . . 9, fully-assembled test devices were tested by applying a 0.1 volt potential across the two isolated interdigited electrodes in the **microelectrode** assembly and measuring the increase in conductivity of the film or layer of conducting polymer as the conducting polymer is. . .
DETD . . . Each component in every embodiment of the present invention can
be manufactured in a batch processing technique. In addition, the **microelectrode** assembly can be manufactured by a number of techniques well-known in the art utilizing a silicon, ceramic, glass or plastic. . .
CLM What is claimed is:
. . . method of claim 1 wherein the means for measuring the change in conductivity of the conducting polymer layer comprises a **microelectrode** assembly in contact with the conducting polymer layer, said **microelectrode** assembly constructed to sense the change in conductivity of the conducting polymer layer in response to the oxidative doping of. . .
. . . The method of claim 3 wherein the means for measuring the change in conductivity of conducting polymer layer comprises a **microelectrode** assembly in contact with the conducting polymer layer, said **microelectrode** assembly adapted to sense the change in conductivity of the conducting polymer layer in response to the oxidative doping of. . .
. . . host matrix layer migrates to and oxidatively dopes the conducting polymer layer causing a change in its conductivity; c) a **microelectrode** assembly in contact with the conducting polymer layer, said **microelectrode** assembly constructed to sense the change in conductivity of the conducting polymer layer in response to the oxidative doping of. . .

L3 ANSWER 18 OF 31 USPATFULL

ACCESSION NUMBER:	93:39876 USPATFULL
TITLE:	Method of forming a permselective layer
INVENTOR(S):	Mier, Randall M., 215 Nepean Avenue #1107, Ottawa, Ontario, Canada K2P 0B7 Piznik, Sylvia, 12 Corrinne Ct., Jackson, NJ, United States 08527 Lauks, Imants R., 1011 Yardley-Morrisville Rd., Yardley, PA, United States 19067 Davis, Graham, 15-04 Fox Run Dr., Plainsboro, NJ, United States 08536

	NUMBER	DATE
PATENT INFORMATION:	US 5212050	19930518
APPLICATION INFO.:	US 1990-568441	19900815 (7)

RELATED APPLN. INFO.:	Division of Ser. No. US 1989-432714, filed on 7 Nov 1989 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned
DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	McCamish, Marion E.
ASSISTANT EXAMINER:	RoDee, Christopher D.
NUMBER OF CLAIMS:	48
EXEMPLARY CLAIM:	1,5,6
NUMBER OF DRAWINGS:	24 Drawing Figure(s); 18 Drawing Page(s)

LINE COUNT: 4425
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM 2.2.3. **Ink Jet** Method
SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .
SUMM . . . 497-500; Morf, W.E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. . .
SUMM 2.2.3. **INK JET** METHODS
SUMM . . . on an integrted ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.
SUMM A film-forming latex, ELVACE, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S.L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14, Conan,. . .
DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 19 OF 31 USPATFULL
ACCESSION NUMBER: 93:29224 USPATFULL
TITLE: Piperidinyl and piperazinyl derivatives
INVENTOR(S): Butera, John A., Kendall Park, NJ, United States
Bagli, Jehan F., Princeton, NJ, United States
Ellingboe, John W., Princeton, NJ, United States
PATENT ASSIGNEE(S): American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5202346	19930413	
APPLICATION INFO.:	US 1992-841922	19920225	(7)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Tsang, Cecilia
LEGAL REPRESENTATIVE: Jackson, Richard K.
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
LINE COUNT: 605
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers with Ag/AgCl half-cells used as reference electrodes. The. . .
DETD . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded on an **ink-jet** recorder. The diastolic blood pressure (BP) and heart rate (HR) were determined before and after each trial.

L3 ANSWER 20 OF 31 USPATFULL
ACCESSION NUMBER: 93:29139 USPATFULL

TITLE: Conductive sensors and their use in diagnostic assays
INVENTOR(S): Musho, Matthew K., Elkhart, IN, United States
Noell, J. Oakey, Mishawaka, IN, United States
Tse, Pius H., Mishawaka, IN, United States
PATENT ASSIGNEE(S): Miles Inc., Elkhart, IN, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5202261	19930413
APPLICATION INFO.:	US 1991-793180	19911118 (7)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1990-554393, filed on 19 Jul 1990, now abandoned
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Warden, Robert J.
ASSISTANT EXAMINER: Trembley, T. A.
LEGAL REPRESENTATIVE: Coe, Roger N.; Jeffers, Jerome L.
NUMBER OF CLAIMS: 21
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 9 Drawing Page(s)
LINE COUNT: 2325
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . interacts with the predetermined analyte and a detection zone including a layer or film of a conducting polymer and a **microelectrode** assembly. More particularly, a diagnostic device is employed to selectively assay a test sample for the presence or concentration of. . .

SUMM . . . In addition, the diagnostic device further comprises a detection zone including a film or layer of conducting polymer and a **microelectrode** assembly. The change in conductivity of the conducting polymer layer as a result of the dopant compound is detected or measured by the **microelectrode** assembly. The change in conductivity then is correlated to the amount of predetermined analyte in the test sample. As will. . . analyte; can be manufactured by well-known semiconductor processing techniques; and does not rely upon a chemical reaction occurring at the **microelectrode** assembly.

SUMM . . . the layer of conducting polymer. The change in conductivity of the conducting polymer then is detected or measured by a **microelectrode** assembly, and can be correlated to the concentration of the predetermined analyte in the test sample.

SUMM . . . and to generate a dopant compound. The detection zone includes a film or layer of a conducting polymer and a **microelectrode** assembly such that the dopant compound can migrate to the detection zone to dope the conducting polymer, and such that the resulting change in conductivity, detected and measured by the **microelectrode** assembly, can be correlated to the amount of predetermined analyte in the test sample. The conductive sensor overcomes the disadvantages. . .

SUMM . . . analyte sensor comprising a reaction zone and a detection zone, wherein the detection zone includes a conducting polymer and a **microelectrode** assembly. More particularly, the present invention is directed to a conductive sensor that allows the sensitive and accurate detection and. . . polymer layer is changed, and the change in conductivity of the conducting polymer layer is detected and measured by the **microelectrode** assembly and is correlated to the concentration of the predetermined analyte in the test sample.

SUMM . . . of the dopant compound into the conducting polymer layer, and the measurable conductivity change is detected and measured by a **microelectrode** assembly in the detection zone and is correlated to the concentration of the predetermined analyte in the test sample.

SUMM . . . and the concentration of the predetermined analyte is determined from the change in conductivity of the conducting polymer by a **microelectrode** assembly in the detection layer. Thus, to

provide an accurate and sensitive assay by eliminating oxygen limitation problems in the. . .

SUMM . . . in the conductivity of the conducting polymer; measuring the change in conductivity of the layer of conducting polymer by a **microelectrode** assembly present in the detection zone; and correlating the change in conductivity of the layer of conducting polymer to the. . .

SUMM . . . zone in contact with the reaction zone including a layer or film of a conducting polymer in contact with a **microelectrode** assembly, such that the dopant compound generated in the reaction zone can migrate to and oxidatively dope the film or layer of the conducting polymer; and c) means operatively connected to the **microelectrode** assembly of the detection zone for measuring the conductivity of the conducting polymer.

SUMM . . . zone in contact with the reaction zone including a layer or film of a conducting polymer in contact with a **microelectrode** assembly, such that the dopant compound generated in the reaction zone can migrate to and oxidatively dope the film or layer of the conducting polymer; and d) means operatively connected to the **microelectrode** assembly of the detection zone for measuring the conductivity of the conducting polymer.

SUMM . . . comprising a detection zone comprising a layer, such as a thin film, of a conducting polymer in contact with a **microelectrode** assembly capable of measuring resistances as high as about 10.sup.9 ohms.

DRWD . . . zone by measuring the change in conductivity of a layer of conducting polymer present in the detection zone with a **microelectrode** assembly;

DRWD FIG. 2 is a top view of a **microelectrode** assembly included in the detection zone of the present invention showing the interdigited **microelectrodes** and the spacing, or gap, between the interdigited **microelectrodes** filled with the conducting polymer;

DETD . . . a reaction zone and a detection zone, wherein the detection zone includes a layer of a conducting polymer and a **microelectrode** assembly, to determine the presence or concentration of a predetermined analyte in a liquid test sample. Although conductive sensors have. . .

DETD . . . with reaction zone 14 (FIG. 1c). The detection zone includes a film or layer of conducting polymer 16 and a **microelectrode** assembly 20. The top surface of the film of conducting polymer 16 is in contact with the reaction zone 14, and the bottom surface of the conducting polymer 16 is in contact with the **microelectrode** assembly 20. In general, in the detection zone, the molecular iodine oxidatively dopes the film or layer of conducting polymer. . . film or layer of conducting polymer 16 increases. A conductometric measurement is made under a constant applied potential between two **microelectrodes** present in the **microelectrode** assembly 20 of the detection zone, and the increase, or the rate of increase, of the conductivity of the film. . .

DETD . . . the molecular iodine is included in the detection zone as a film or layer positioned in laminar contact with the **microelectrode** assembly 20. In particular, the **microelectrode** assembly 20 includes an interdigited pair of metal electrodes with an insulating spacing of from about 5.mu. to about 300.mu.,. . . of metal electrodes has as small an insulating spacing as possible, such as from about 5.mu. to about 15.mu.. The **microelectrode** assembly 20 can be any electrode assembly capable of measuring a conductivity in the range of from about 10.sup.-7 S/cm. . . a film or layer of conducting polymer 16 approximately 100 .ANG. to approximately 1500 .ANG. in thickness. Although a suitable **microelectrode** assembly 20 can be any one of a variety of configurations, an especially suitable configuration is illustrated in FIG. 2,. . .

DETD In particular, the **microelectrode** assembly 30 illustrated in FIG. 2 comprises a base 32 of a smooth, nonconductive material, like silicon metal, ceramic or. . . vias (not shown) incorporated into the base 32. The interdigited patterns of conductive material 34 and 36 serve as the **microelectrodes** of the **microelectrode** assembly of the conductive sensor. Therefore, when a layer or film of conducting polymer is applied to the **microelectrode** assembly 30, the film or layer of conducting polymer bridges, or fills, the gap 38 between the interdigited patterns of. . . a change in conductivity of the layer or film of conducting polymer in the gap 38 is detected by the **microelectrodes** comprising the interdigited patterns of conductive material 34 and 36. The manufacture of a **microelectrode** assembly 30 will be discussed more fully hereinafter.

DETD In further regard to FIG. 1, in addition to the **microelectrode** assembly 20, another essential component in the detection zone of the conductive sensor is a thin, uniform layer or film. . .

DETD . . . chemical identity of the conducting polymer, the thickness of the layer or film of conducting polymer 16 applied onto the **microelectrode** assembly 20 is important because the thickness of the layer or film of conducting polymer 16 is directly related to. . .

DETD . . . conducting polymer 16 can be utilized as long as the gap between the interdigited patterns of conductive material in the **microelectrode** assembly 20 is bridged, or filled, with the conducting polymer and as long as the interdigited patterns of conductive material. . .

DETD . . . thin polymer layers, or films, onto a substrate. These processing techniques include batch process techniques like spin coating, film casting, **ink jet** printing and similar batch process techniques. In particular, spin coating is a preferred method of depositing a layer or film. . .

DETD . . . addition to the particular chemical and physical properties required of the film or layer of conducting polymer 16 and the **microelectrode** assembly 20 in the detection zone of the conductive sensor of the test device 10 in FIG. 1, the reaction. . .

DETD . . . test device 10. The change in conductivity of the layer or film of conducting polymer 16 is measured by the **microelectrode** assembly 20 and can be correlated to the amount of predetermined analyte in the test sample by comparison to the. . .

DETD . . . 44 in laminar contact with a detection zone including a film or layer of a conducting polymer 46 and a **microelectrode** assembly 50 that are essentially identical to the reaction zone 14 and the detection zone of the conductive sensor of. . .

DETD . . . to the migration rate of the predetermined analyte through semipermeable membrane 42. The increase in conductivity is detected by a **microelectrode** assembly 50 that is in contact with the layer or film of conducting polymer 46. Therefore, the concentration of the. . .

DETD . . . used in an assay for glucose. The test device included a conductive sensor 40 illustrated in FIG. 2. First, the **microelectrode** assembly 50 of FIG. 3, and more fully illustrated as the **microelectrode** assembly 30 in FIG. 2, was prepared. Accordingly, a wafer or layer of a smooth, nonconductive material, for example, but. . . limited to, silicon, ceramic, teflon, polycarbonate, polypropylene, kevlar, chrome-treated glass and glass, was used as the base 32 of the **microelectrode** assembly 30 in FIG. 2 for the subsequent deposition of the interdigited patterns of conductive material 34 and 36.

DETD Therefore, a test device of the present invention utilizes a smooth and nonconductive base for the **microelectrode** assembly, wherein the top, or sensing, surface of the **microelectrode** assembly includes an interdigited metal pattern, like a gold pattern, printed onto the base of the **microelectrode** assembly by procedures well known in the art. Electrical contact to the top sensing surface of the **microelectrode** assembly is accomplished by gold vias to the back surface of the base of the **microelectrode** assembly. Large gold contact pads positioned on the back surface of the base of the **microelectrode** assembly provide an electrical connection to detection instruments, such as a conductivity meter. This particular configuration isolates the top, sensing surface of the **microelectrode** assembly from the contact pads on the bottom surface of the base of the **microelectrode** assembly, and therefore avoids making an electrical contact to detection instruments through the chemical layers of the reaction zone and detection zone that subsequently are positioned over the top sensing surface of the **microelectrode** assembly.

DETD Accordingly, after manufacturing a **microelectrode** assembly, a layer or film of conducting polymer, from about 100 .ANG. to about 10,000 .ANG. in thickness, is deposited. . .

DETD Therefore, onto the top sensing surface of the **microelectrode** assembly is positioned a layer or film of a suitable conducting polymer.

As stated previously, a suitable conducting polymer provides. . . the conducting polymer should be stable and easy to process such that the conducting polymer can be applied to the **microelectrode** assembly as a uniform, thin film or layer by spin coating, film casting, jet printing or a similar application technique. . .

DETD . . . properties, such as solubility in organic solvents, to provide a thin, uniform layer or film of conducting polymer on the **microelectrode** assembly. As previously discussed, the conducting polymer can be admixed with nonconducting polymers, or the conducting polymer can be a. . .

DETD Before applying the solution of the conducting polymer to the **microelectrode** assembly, the **microelectrode** assembly is cleaned with a solvent, like chloroform, by washing the **microelectrode** assembly, then spinning the electronic template dry on a PHOTO-RESIST SPINNER, available from Headway Research Inc., Garland, Tex. With the **microelectrode** assembly at rest on the spinner, the top sensing surface of the **microelectrode** assembly is flooded with the conducting polymer-xylene solution and then spun to dryness at 3000 rpm for approximately 20 seconds. . .

DETD . . . 7, fully-assembled test devices were tested by applying a 0.1 volt potential across the two isolated interdigited electrodes in the **microelectrode** assembly and measuring the increase in conductivity of the film or layer of conducting polymer as the conducting polymer is. . .

DETD . . . 9, fully-assembled test devices were tested by applying a 0.1 volt potential across the two isolated interdigited electrodes in the **microelectrode** assembly and measuring the increase in conductivity of the film or layer of conducting polymer as the conducting polymer is. . .

DETD . . . Each component in every embodiment of the present invention can be manufactured in a batch processing technique. In addition, the **microelectrode** assembly can be manufactured by a number of techniques well-known in the art utilizing a silicon, ceramic, glass or plastic. . .

CLM What is claimed is:

. . . conductive sensor of claim 1 wherein the means for measuring the change in conductivity of the polymer layer comprises a

microelectrode assembly in contact with the polymer layer, said **microelectrode** assembly constructed to sense the change in conductivity of the polymer layer in response to the oxidative doping of the. . .

3. The conductive sensor of claim 2 wherein the **microelectrode** assembly comprises an interdigited pair of metal electrodes having an insulating spacing of from about 10.mu. to about 300.mu..

. . . molecular iodine generated in the host matrix layer migrates to and oxidatively dopes the conducting polymer layer; and d) a **microelectrode** assembly in contact with the conducting polymer layer, said **microelectrode** assembly adapted to sense a change in conductivity of the conducting polymer layer in response to the oxidative doping of. . .

L3 ANSWER 21 OF 31 USPATFULL

ACCESSION NUMBER:	93:26742 USPATFULL
TITLE:	Wholly microfabricated biosensors and process for the manufacture and use thereof
INVENTOR(S):	Cozzette, Stephen N., Nepean, Canada Davis, Graham, Plainsboro, NJ, United States Itak, Jeanne A., North Brunswick, NJ, United States Lauks, Imants R., Yardley, PA, United States Mier, Randall M., Morrisville, PA, United States Piznik, Sylvia, Jackson, NJ, United States Smit, Nicolaas, Hightstown, NJ, United States Steiner, Susan J., Trenton, NJ, United States Van Der Werf, Paul, Princeton Junction, NJ, United States Wieck, Henry J., Plainsboro, NJ, United States
PATENT ASSIGNEE(S):	I-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5200051	19930406
APPLICATION INFO.:	US 1989-432714	19891107 (7)

RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned
DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Niebling, John
ASSISTANT EXAMINER:	Bell, Bruce F.
LEGAL REPRESENTATIVE:	Pennie & Edmonds
NUMBER OF CLAIMS:	51
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT:	4435

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .

SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .

SUMM 2.2.3. **INK JET** METHODS

SUMM . . . on an integrted ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process

utilizes spray type technology with the fluid drop being. . . from 20
to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A film-forming latex, ELVACE, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .

DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 22 OF 31 USPATFULL

ACCESSION NUMBER:	92:78889 USPATFULL
TITLE:	Substituted arylsulfonamides and benzamides
INVENTOR(S):	Ellingboe, John W., Princeton, NJ, United States Bagli, Jehan F., Princeton, NJ, United States Winkley, Michael W., St. Albans, VT, United States
PATENT ASSIGNEE(S):	American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5149700	19920922
APPLICATION INFO.:	US 1991-785136	19911030 (7)
RELATED APPLN. INFO.:	Continuation of Ser. No. US 1990-530684, filed on 30 May 1990, now abandoned	
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Shah, Mukund J.	
ASSISTANT EXAMINER:	Grumbling, Matthew V.	
LEGAL REPRESENTATIVE:	Patton, Walter	
NUMBER OF CLAIMS:	21	
EXEMPLARY CLAIM:	1	
LINE COUNT:	1346	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers and Ag/AgCl half-cells used
as reference electrodes. The. . .

SUMM . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded on an **ink-jet** recorder. The diastolic threshold was determined before and after each trial.

L3 ANSWER 23 OF 31 USPATFULL

ACCESSION NUMBER:	92:29709 USPATFULL
TITLE:	Substituted benzimidazole derivatives possessing Class III antiarrhythmic activity
INVENTOR(S):	Butera, John A., Kendall Park, NJ, United States Bagli, Jehan F., Princeton, NJ, United States Ellingboe, John W., Princeton, NJ, United States
PATENT ASSIGNEE(S):	American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5104892	19920414
APPLICATION INFO.:	US 1990-612727	19901113 (7)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1990-551588, filed on 11 Jul 1990, now abandoned which is a division of Ser. No. US 1990-521787, filed on 10 May 1990, now abandoned which is a continuation-in-part of Ser. No. US 1989-451391, filed on 11 Dec 1989, now abandoned	

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Rivers, Diana
ASSISTANT EXAMINER: Grumbling, Matthew V.
LEGAL REPRESENTATIVE: Patton, Walter
NUMBER OF CLAIMS: 7
EXEMPLARY CLAIM: 1
LINE COUNT: 983
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers and Ag/AgCl half-cells used
as reference electrodes. The. . .
SUMM . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded by a **ink-jet** recorder. Diastolic threshold
was determined before and after each trial.

L3 ANSWER 24 OF 31 USPATFULL
ACCESSION NUMBER: 92:7352 USPATFULL
TITLE: N-quinolinyl alkyl-substituted 1-aryloxy-2-propanolamine and propylamine derivatives possessing class III antiarrhythmic activity
INVENTOR(S): Butera, John A., Kendall Part, NJ, United States
Bagli, Jehan F., Princeton, NJ, United States
PATENT ASSIGNEE(S): American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5084463	19920128
APPLICATION INFO.:	US 1990-634678	19901227 (7)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1990-521787, filed on 10 May 1990, now abandoned which is a continuation-in-part of Ser. No. US 1989-451391, filed on 11 Dec 1989, now abandoned
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Ivy, C. Warren
ASSISTANT EXAMINER: Northington-Davis, Zinna
LEGAL REPRESENTATIVE: Patton, Walter
NUMBER OF CLAIMS: 14
EXEMPLARY CLAIM: 1
LINE COUNT: 1433
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers and Ag/AgCl half-cells used
as reference electrodes. The. . .
SUMM . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded by a **ink-jet** recorder. Diastolic threshold
was determined before and after each trial.

L3 ANSWER 25 OF 31 USPATFULL
ACCESSION NUMBER: 91:90615 USPATFULL
TITLE: Method of manufacturing a plurality of uniform microfabricated sensing devices having an immobilized ligand receptor
INVENTOR(S): Cozzette, Stephen N., Hightstown, NJ, United States
Davis, Graham, Plainsboro, NJ, United States
Itak, Jeanne, Hamilton, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, Randall M., Ottawa, Canada
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Steiner, Susan, Trenton, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United

States
Wieck, Henry J., Brooklyn, NY, United States
PATENT ASSIGNEE(S): I-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5063081	19911105
APPLICATION INFO.:	US 1990-567870	19900815 (7)

RELATED APPLN. INFO.: Division of Ser. No. US 1989-432714, filed on 7 Nov 1989 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Beck, Shrive
ASSISTANT EXAMINER: Owens, Terry J.
LEGAL REPRESENTATIVE: Pennie & Edmonds
NUMBER OF CLAIMS: 31
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT: 4283
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM 2.2.3 **Ink Jet** Methods
SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .
SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. . .
SUMM 2.2.3. **Ink Jet** Methods
SUMM . . . on an integrated ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.
SUMM A film-forming latex, ELVACE, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14,. . .
DETD . . . constant independent of T, A, or B. For additional discussion of the Nicolsky equation, please refer to Amman, D. Ion-Selective **Microelectrodes**, Springer, Berlin (1986) p. 68 and references cited therein.

L3 ANSWER 26 OF 31 USPATFULL
ACCESSION NUMBER: 91:15166 USPATFULL
TITLE: Aryloxypropane substituted piperazine derivatives with antiarrhythmic and antifibrillatory activity
INVENTOR(S): Butera, John A., Kendall Park, NJ, United States
Bagli, Jehan F., Princeton, NJ, United States
PATENT ASSIGNEE(S): American Home Products Corporation, New York, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4994459	19910219

APPLICATION INFO.: US 1989-449273 19891211 (7)
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hollrah, Glennon H.
ASSISTANT EXAMINER: Turnipseed, James H.
LEGAL REPRESENTATIVE: Patton, Walter
NUMBER OF CLAIMS: 9
EXEMPLARY CLAIM: 1,9
LINE COUNT: 546
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM Glass **microelectrodes** filled with 3M KCl were coupled to high impedance negative capacitance electrometers and Ag/AgCl half-cells used as reference electrodes. The. . .
SUMM . . . isolation unit. Electrical signals from the atrial and ventricular electrodes were displayed on a digital oscilloscope and recorded by a **ink-jet** recorder. Diastolic threshold was determined before and after each trial.

L3 ANSWER 27 OF 31 USPATFULL
ACCESSION NUMBER: 90:23503 USPATFULL
TITLE: Reverse development method
INVENTOR(S): Asanae, Masumi, Kumagaya, Japan
Kimura, Fumio, Isezaki, Japan
PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4912003	19900327
APPLICATION INFO.:	US 1988-235122	19880823 (7)
PRIORITY INFORMATION:	JP 1987-209566	19870824

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Martin, Roland E.
LEGAL REPRESENTATIVE: Finnegan, Henderson Farabow, Garrett & Dunner
NUMBER OF CLAIMS: 3
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 445
SUMM The nonimpact-type printers ar classified into three groups; an electrophotographic type, an electrostatic type and an **ink jet** type rom the viewpoint of recording methods. In order to cope with the recent trends of increase in recording speeds. . .
SUMM . . . consisting of line images but also of those including picture images, a development roll provided with a large number of **microelectrodes** (float electrodes) electrically insulated from each other was proposed and put to practical use (Japanese Patent Laid-Open No. 57-114163).
SUMM . . . and a dielectric layer 7 provided around and fixed to the magnet 6. The dielectric layer 7 is provided with **microelectrodes** or float electrodes (not shown) composed of conductive particles mutually insulated from each other. 8 denotes a blade in contact. . .

L3 ANSWER 28 OF 31 USPATFULL
ACCESSION NUMBER: 90:11475 USPATFULL
TITLE: Electric discharge machining method and apparatus for machining a microshaft
INVENTOR(S): Masaki, Takeshi, Kawasaki, Japan
Mizutani, Takeshi, Tokyo, Japan
Yonemaochi, Katsutoshi, Zama, Japan
Tanaka, Akemi, Kawasaki, Japan
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Osaka, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4900890	19900213	
APPLICATION INFO.:	US 1988-239293	19880901	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1987-223479	19870907
	JP 1987-262046	19871016
	JP 1987-262047	19871016
	JP 1987-262059	19871016
	JP 1988-58737	19880311
	JP 1988-58738	19880311
	JP 1988-147462	19880615

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Pellinen, A. D.
ASSISTANT EXAMINER: Evans, Geoffrey S.
LEGAL REPRESENTATIVE: Lowe, Price, Leblanc, Becker & Shur
NUMBER OF CLAIMS: 18
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 22 Drawing Figure(s); 9 Drawing Page(s)
LINE COUNT: 830

SUMM . . . more particularly to such a method and apparatus for machining, by means of the electric discharge, a microshaft such as **microelectrode** employed for forming a microhole such as a nozzle of an **ink jet** printer and an optical fiber connector.

SUMM . . . technique is known, as exemplified by description in "National Technical Report" Vol. 31 No. 5 Page 105, in which a **microelectrode** is electrically discharged with respect to a metallic block so that its diameter is gradually decreased to a desirable value.. . . One important problem in such a conventional electric discharge machining method is, however, to scattering in diameters of the machined **microelectrodes** due to wearing of the metallic block during the electric discharge process. This results in difficulty being encountered to accurately machine the **microelectrodes** so as to have the desirable diameter. Furthermore, in the case that the **microelectrode** is machined so as to have a considerably small diameter, the **microelectrode** tends to be deflected during the electric discharge process to cause the **microelectrode** to be finished to a tapered configuration.

L3 ANSWER 29 OF 31 USPATFULL
ACCESSION NUMBER: 90:10993 USPATFULL
TITLE: Surface type microelectronic gas and vapor sensor
INVENTOR(S): Otagawa, Takaaki, Fremont, CA, United States
Madou, Marc J., Palo Alto, CA, United States
PATENT ASSIGNEE(S): SRI International, Menlo Park, CA, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4900405	19900213	
APPLICATION INFO.:	US 1987-73712	19870715	(7)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Walton, Donald L.
LEGAL REPRESENTATIVE: Fliesler, Dubb, Meyer & Lovejoy
NUMBER OF CLAIMS: 88
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 17 Drawing Figure(s); 8 Drawing Page(s)
LINE COUNT: 1359
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . example solution casting, separate casting on a different

substrate and physical transfer, heat shrinking in place, solution casting utilizing an **ink-jet** printer, spin coating, or dip coating. If the barrier 42 is in the nature of uniform latex microspheres, made for example of polystyrene, styrene-butydiene, or Teflon (trademark of DuPont), such microspheres can be placed in position utilizing an **ink-jet** like technique, by dipping, by solvent spraying, or the like. If the barrier 42 is of the nature of or includes activated carbon or similar materials it can be placed in position by **ink-jet** type printing, solvent casting, or the like. If the barrier includes, for example, permanganate coated alumina or other substance which. . .

DETD . . . 8 with very small gaps 115. Solid polymer electrolytes, when used, can be provided by using lift off technology or **ink-jet** printer like technology. Hydrogels, when used, can be provided as are solid polymer electrolytes. The thickness of the electrolytic medium. . .

DETD The responses to CO and various other gases were studied using a planar type **microelectrode**. The basic sensor design is shown in FIG. 11. The masks are designed to produce gaps that range in size from 5 to 50 microns between adjacent **microelectrodes**. A smooth Al.sub.2 O.sub.3 ceramic (Kyocera type A 493) was used as the substrate. Platinum was used as electrode material. . .

L3 ANSWER 30 OF 31 USPATFULL

ACCESSION NUMBER:	87:68713 USPATFULL
TITLE:	Nozzleless liquid droplet ejectors
INVENTOR(S):	Quate, Calvin F., Stanford, CT, United States Khuri-Yakub, Butrus T., Palo Alto, CA, United States
PATENT ASSIGNEE(S):	Xerox Corporation, Stanford, CT, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4697195	19870929
APPLICATION INFO.:	US 1987-946682	19870105 (6)

RELATED APPLN. INFO.:	Continuation of Ser. No. US 1985-776291, filed on 16 Sep 1985, now abandoned
DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Hartary, Joseph W.
NUMBER OF CLAIMS:	19
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	6 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT:	516

AB A nozzleless print head for **ink jet** printing and the like comprises one or more essentially planar surface acoustic wave transducers which are submerged at a predetermined. . .

SUMM . . . focused acoustic generators for ejecting liquid droplets from liquid filled reserviors and, more particularly, to relatively reliable print heads for **ink jet** printers and the like.

SUMM Substantial effort and expense have been devoted to the development of **ink jet** printers, especially during the past couple of decades. As is known, **ink jet** printing has the inherent advantage of being a plain paper compatible, direct marking technology, but the printers which have been. . . low cost, reliable print heads for them have been a contributing factor. Print heads have been provided for low speed **ink jet** printers, but they have not been fully satisfactory from a cost or a reliability point of view. Moreover, higher speed **ink jet** printing has not been practical due to the performance limitations of the available print heads.

SUMM "Continuous stream" and "drop on demand" print heads have been developed for **ink jet** printers. There are functional and

structural differences which distinguish those two basic print head types from one another, but print. . .

SUMM Others have proposed nozzleless print heads for **ink jet** printing. For example, Lovelady et al. U.S. Pat. No. 4,308,547, which issued Dec. 24, 1981 on a "Liquid Drop Emitter,". .

SUMM . . . Vol. 32, 1936, pp. 1532-1536. Now, however, the physics of such ejectors are sufficiently well understood to configure them for **ink jet** printing and other applications where it is necessary to control both the timing of the droplet ejection and the size. . . that are ejected. Indeed, an inexpensive, reliable, readily manufacturable liquid droplet ejector providing such control is clearly needed for nozzleless **ink jet** printing and the like.

DETD For **ink jet** printing, the ejector 11 emits a time sequenced series of liquid ink droplets 14 from the reservior 13 to print. . .

DETD . . . reduce their center-to-center spacing. See K. A. Fishbeck's commonly assigned U.S. Pat. No. 4,509,058, which issued Apr. 2, 1985 on "**Ink Jet** Printing Using Horizontal Interlace." Areal ejector arrays (not shown) also may be constructed in accordance with this invention, but an. . .

DETD . . . centers, so they are suitably configured to enable the droplet ejectors 11a to function as a multi-element print head for **ink jet** line printing. Preferably, the transducer 12aa-12ai are integrated on and share a single or common piezoelectric substrate 27a, thereby permitting. . .

DETD . . . droplet ejectors 11a have greater flexibility than the ejector 11 (for instance, the ejectors 11a maybe used for dot matrix **ink jet** printing or they may perform solid line printing without the need for any mechanical motion of the transducers 12aa-12ai), but. .

DETD . . . are positioned orthogonally with respect to one another, thereby permitting the beam 33a to be orthogonally steered for dot matrix **ink jet** printing and similar applications.

CLM What is claimed is:

3. The droplet ejector of claim 2 wherein said **electrods** are a photolithographically patterned metalization deposited on said substrate.

L3 ANSWER 31 OF 31 USPATFULL

ACCESSION NUMBER:	81:16699 USPATFULL
TITLE:	Image recording apparatus
INVENTOR(S):	Sekine, Yoichi, Hirakata, Japan Kishimoto, Yoshio, Hirakata, Japan Shimotsuma, Wataru, Ibaraki, Japan
PATENT ASSIGNEE(S):	Matsushita Electric Industrial Co., Ltd., Osaka, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4258371	19810324	
APPLICATION INFO.:	US 1979-94588	19791115	(6)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1978-143700	19781120
	JP 1978-145495	19781124
	JP 1978-145496	19781124
	JP 1979-5091	19790119
	JP 1979-133254	19791015
	JP 1979-133255	19791015
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Hartary, Joseph W.	

LEGAL REPRESENTATIVE: Stevens, Davis, Miller & Mosher
NUMBER OF CLAIMS: 17
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 14 Drawing Figure(s); 7 Drawing Page(s)
LINE COUNT: 789
SUMM A so-called **ink jet** recording method was also already known as a means for directly recording an image on a recording sheet of plain. . .
DETD . . . sequential fashion. On the other hand, pulse signals processed to correspond to the image are sequentially applied to the opposite **electrods** 10. In this case, in order to ensure the fidelity of response of the styli 1 disposed opposite to the. . .

=> dup rem l2d his

ENTER L# LIST OR (END):end

=> d his

(FILE 'HOME' ENTERED AT 11:31:31 ON 06 NOV 2000)

FILE 'CAPLUS, MEDLINE, SCISEARCH, BIOSIS, USPATFULL' ENTERED AT 11:31:47 ON 06 NOV 2000
L1 26253 S INK JET
L2 31 S L1 AND (ELECTRODS OR MICROELECTRODE)
L3 31 DUP REM L2 (0 DUPLICATES REMOVED)

=> s l1 and (electrode)

L4 4328 L1 AND (ELECTRODE)

=> s l1 and (electrode array

UNMATCHED LEFT PARENTHESIS 'AND (ELECTRODE'
The number of right parentheses in a query must be equal to the number of left parentheses.

=> s l1 and (electrode array)

L5 102 L1 AND (ELECTRODE ARRAY)

=> s l1 (p) (electrode array)

L6 47 L1 (P) (ELECTRODE ARRAY)

=> dup rem l6

PROCESSING COMPLETED FOR L6
L7 45 DUP REM L6 (2 DUPLICATES REMOVED)

=> d ibib kwic 1-

YOU HAVE REQUESTED DATA FROM 45 ANSWERS - CONTINUE? Y/(N):y

L7 ANSWER 1 OF 45 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:511892 CAPLUS
DOCUMENT NUMBER: 133:127419
TITLE: Organic EL devices, display and manufacture
INVENTOR(S): Miyashita, Satoru; Shimoda, Tatsuya; Kiguchi, Hiroshi;
Kobayashi, Hidekazu
PATENT ASSIGNEE(S): Seiko Epson Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000208254	A2	20000728	JP 1999-4682	19990111

AB The manufg. process comprises the steps of: forming, on a glass substrate, an ITO 1st pixel **electrode array** (.dblvert. X); forming a hole injection and a hole transport layer by coating a polythiophen deriv. and a silane coupler and by curing them; irradiating a fluorocarbon (CF4) plasma thereon; forming a red, a green and a blue pixel matrix by **ink jet** injection of polyparaphenylene derivs.; forming a 2nd pixel **electrode array** (.dblvert. Y); and forming a TFT driver matrix.

L7 ANSWER 2 OF 45 USPATFULL
ACCESSION NUMBER: 2000:127453 USPATFULL
TITLE: Ink jet recording apparatus
INVENTOR(S): Nagato, Hitoshi, Kunitachi, Japan
Murakami, Teruo, Yokohama, Japan
Hirahara, Shuzo, Yokohama, Japan
Nakao, Hideyuki, Kawasaki, Japan
Ishii, Koichi, Kawasaki, Japan
Hosaka, Yasuo, Shinjuku-Ku, Japan
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Kawasaki, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 6123415	20000926	
APPLICATION INFO.:	US 1996-774072	19961223	(8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1995-333326	19951221
	JP 1996-10186	19960124
	JP 1996-14142	19960130
	JP 1996-243001	19960913

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Barlow, John
ASSISTANT EXAMINER: Dickens, C.
LEGAL REPRESENTATIVE: Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
NUMBER OF CLAIMS: 12
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 54 Drawing Figure(s); 38 Drawing Page(s)
LINE COUNT: 2934
AB In the **ink jet** recording apparatus for recording an image by supplying ink obtained by dispersing color material components in a solvent to a. . . to the color material components, the recording apparatus comprises a driving circuit (107) for applying voltages to electrodes of an **electrode array** (102) arranged on a head substrate (101), in such a way that a first potential difference whose potential level relationship. . . between the two adjacent electrodes can be applied when the ink drops are jetted toward a recording medium. In this **ink jet** recording apparatus, a stable recording can be made by uniformalizing the density of the ink color material components on the. . .
SUMM (1A) Further, in the above-mentioned prior art **ink jet**

recording apparatus for jetting ink drops by use of electrostatic force,

the ink drops can be jetted when a pulse voltage varying according to image signals are applied to the **electrode array**. Here, the case where ink drops are jetted from the electrodes by applying the pulse voltages to only the alternately arranged electrodes of the **electrode array** will be considered. This corresponds to the case where vertical stripes are recorded along the sub-scanning direction. In this case,. . . since the quantity of the charged color material components moved by the electrostatic force lacks

on the respective electrodes, the **ink jet** operation becomes unstable, so that the density of the recorded image is not only non-uniformalized but also the ink drops. . .

SUMM Further, the present invention can be applied to the line-scanning type **ink jet** recording head provided with an **electrode array** obtained by arranging a plurality of electrodes on the head substrate. In this case, the voltage applying means applies voltages to the **electrode array** in such a way that a potential difference whose potential level relationship is reversed at a predetermined period can be. . . between two adjacent electrodes. Further, when the ink drops are not jetted, the voltage applying means applies voltages to the **electrode array** selectively in such a way that a first potential difference whose potential level relationship is reversed at a

predetermined period. . .

SUMM The recording apparatus according to the present invention can be applied to the **ink jet** recording head having a set of the first and second electrodes and the line-scanning type **ink jet** recording head having a plurality of electrodes arranged on the head substrate to which the ink is supplied. In the later case, the voltage applying means is provided for applying voltages to the **electrode array** in such a way that the first potential difference between the first electrodes the nearest to the positions at which. . .

DRWD FIG. 14 is a pattern of voltages applied to the **electrode array**, for assistance in explaining the fifth embodiment of the driving method of the **ink jet** recording apparatus according to the present invention;

DRWD FIG. 15 is a pattern of voltages applied to the **electrode array**, for assistance in explaining a modification of the sixth embodiment of the driving method of the **ink jet** recording apparatus according to the present invention;

DRWD FIG. 17 is a timing chart of voltages applied to the **electrode array**, for assistance in explaining the seventh embodiment of the driving method of the **ink jet** recording apparatus according to the present invention, when all-marked recording is made;

DRWD FIG. 18 is a timing chart of voltages applied to the **electrode array**, for assistance in explaining the seventh embodiment of the driving method of the **ink jet** recording apparatus according to the present invention, in which the actual recording is made;

DRWD FIG. 19 is a timing chart of voltages applied to the **electrode array**, for assistance in explaining the eighth embodiment of the driving method of the **ink jet** recording apparatus according to the present invention, in which the actual recording is made;

DRWD FIG. 20 is a timing chart of voltages applied to the **electrode array**, for assistance in explaining the ninth embodiment of the driving method of the **ink jet** recording apparatus according to the present invention, in which the actual recording is made;

DRWD FIG. 22 is a pattern of voltages applied to the **electrode array**, for assistance in explaining the tenth embodiment of the

driving method of the **ink jet** recording apparatus according to the present invention;

DETD FIG. 1 shows the construction of an **ink jet** recording apparatus using a first embodiment of the line scanning type **ink jet** recording head according to the present invention. In the drawing, a recording head 100 is composed of a head substrate 101 having an **electrode array** 102 formed by arranging stripe-shaped individual electrodes each corresponding to each of pixels in a main scanning direction (perpendicular to. . .

DETD In the second embodiment, all the individual electrodes of the **electrode array** 102 are divided into two groups alternately, and the two-division driving method has been explained such that after one of. . . both the time T1 for cohering the color material components and the time Tw for applying the third voltage (i.e., **ink jet** time) (the maximum value) can be determined freely. This two-division driving method can be adopted in practice without causing any. . .

DETD . . . various modification can be made without departing from the spirit thereof. For instance, in the above-mentioned embodiments, the line-scanning type **ink jet** recording head is used such that the **electrode array** is formed by arranging a number of stripe-shaped individual electrodes, and one-line is recorded at the same time or being. . .

DETD The fifth embodiment of the driving method of the **electrode array** 102 of the **ink jet** recording apparatus according to the present invention will be described hereinbelow with reference to FIG. 14. In FIG. 14, the electrodes of the **electrode array** 102 are divided into a first individual electrode 401 (shown by white) and two second individual electrodes 402 (shown by. . .

DETD In the fifth embodiment, the operation has been explained by using the three individual electrodes of the **electrode array** 102. However, the following driving method is adopted for the whole **electrode array** 102. This driving method is effective when one line is recorded at the same time or being divided into several times by use of a line-scanning type **ink-jet** recording head.

DETD FIG. 21 shows an essential portion of this tenth embodiment of the **ink jet** recording head, in which an **electrode array** 601 is arranged on a head substrate 600. Further, two plate-shaped common electrodes 602 are arranged in parallel to the head substrate 600 and so as to face the **electrode array** 601. Here, a plurality of the individual electrodes constituting the **electrode array** 601 are used as the first individual electrodes of the seventh embodiment, and the common electrodes 601 are used as the second individual electrodes of the seventh embodiment. Further, voltages are applied to the **electrode array** 601 and the common electrodes 602, respectively by the driving circuit (shown in FIG. 1) in such a way that. . .

CLM What is claimed is:

10. The **ink jet** recording method according to claim 7, wherein said voltage applying circuit applies voltage to said array of electrodes and a plate-shaped common electrode disposed opposite to said **electrode array** and substantially in parallel to said head substrate in such a way that said first potential difference is lower than. . .

L7 ANSWER 3 OF 45 USPATFULL

ACCESSION NUMBER: 2000:108600 USPATFULL
TITLE: Magnetic sensor for ink detection
INVENTOR(S): Wen, Xin, Rochester, NY, United States
Chamberlain, IV, Frederick R., Encinitas, CA, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States

(U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6106089	20000822
APPLICATION INFO.:	US 1997-958274	19971027 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1997-846923, filed on 30 Apr 1997, now abandoned which is a continuation-in-part of Ser. No. US 1997-846693, filed on 30 Apr 1997, now patented, Pat. No. US 5792380

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Pendergrass, Joan
LEGAL REPRESENTATIVE: Noval, William F.
NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 521

SUMM . . . receiver. The extent of ejection is claimed to be very small in the above Cielo patents, as opposed to an "**ink jet**", contact with the paper being the primary means of printing an ink drop. This system is disadvantageous, in that a plurality of high voltages must be controlled and communicated to the **electrode array**. Also, the electric fields between neighboring electrodes interfere with one another. Further, the fields required are larger than desired to. . .

L7 ANSWER 4 OF 45 USPATFULL

ACCESSION NUMBER: 2000:94189 USPATFULL
TITLE: Ink-jet head and ink-jet recording device each having a protruded-type electrode
INVENTOR(S): Nakamoto, Masayuki, Chigasaki, Japan
Hirahara, Shuzo, Yokohama, Japan
Murakami, Teruo, Yokohama, Japan
Nagato, Hitoshi, Tokyo, Japan
Nakao, Hideyuki, Kawasaki, Japan
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Kawasaki, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 6092889	20000725
APPLICATION INFO.:	US 1996-712668	19960913 (8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1995-235413	19950913
	JP 1995-235414	19950913

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Barlow, John
ASSISTANT EXAMINER: Dickens, C.
LEGAL REPRESENTATIVE: Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
NUMBER OF CLAIMS: 38
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT: 1057

SUMM However, as shown in FIGS. 1 and 2, the head of the **ink-jet** printer in these electrostatic method in which the pointed end of the **electrode array** 42, 52 project out of the end face of the head substrates 41, 51, or meet the end face thereof. Accordingly, the **electrode array** would be easy to damage because the recording paper comes into contact with the **electrode array**. Further, from the view point of the manufacturing method thereof, it can not use a high precision

manufacturing technology used. . .

SUMM As described above, since the **ink-jet** printer head in which the color component within the liquid ink is jetted by the conventional electrostatic force, includes the **electrode array** located at the end face of the head substrate, the recording paper or the like which comes into contact with the **electrode array** in the printer assembly, which is easy to damage. Further, in regard to the manufacturing of the head, there are. . . problem of an extra ordinary discharge caused by the shape non-uniformity. When it intends to constitute a multi-head, since the **electrode array** portion is formed on the surface of the head substrate, the electric field influences between adjacent electrodes with each other. . .

L7 ANSWER 5 OF 45 USPATFULL

ACCESSION NUMBER:	2000:40054 USPATFULL
TITLE:	Ink-jet recording device having an ultrasonic generating element array
INVENTOR(S):	Hirahara, Shuzo, Yokohama, Japan Saito, Tutomu, Yokohama, Japan Nagato, Hitoshi, Tokyo, Japan Itakura, Tetsuro, Tokyo, Japan Takayama, Satoshi, Kawasaki, Japan Nukada, Hideki, Yokohama, Japan Hattori, Shunsuke, Kawasaki, Japan Kudo, Noriko Y., Yokohama, Japan Saitoh, Shiroh, Kawasaki, Japan Sugiuchi, Masami, Yokohama, Japan Tokai, Yoichi, Yokohama, Japan Murakami, Fumihiko, Yokohama, Japan Tanaka, Hisako, Tokyo, Japan Tanuma, Chiaki, Yokohama, Japan Izumi, Mamoru, Tokyo, Japan Amemiya, Isao, Kawasaki, Japan Nakamura, Atsuko, Yokosuka, Japan Shimizu, Seizaburou, Yokohama, Japan Okuwada, Kumi, Kawasaki, Japan
PATENT ASSIGNEE(S):	Kabushiki Kaisha Toshiba, Kawasaki, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 6045208	20000404	
APPLICATION INFO.:	US 1995-501259	19950711	(8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1994-158515	19940711
	JP 1994-238102	19940930
	JP 1995-45661	19950306
	JP 1995-47290	19950307

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Metjahic, Safet
ASSISTANT EXAMINER:	Mahoney, Christopher E.
LEGAL REPRESENTATIVE:	Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
NUMBER OF CLAIMS:	34
EXEMPLARY CLAIM:	8
NUMBER OF DRAWINGS:	112 Drawing Figure(s); 39 Drawing Page(s)
LINE COUNT:	5133

DETD FIG. 56 is a sectional view of the recording head section incorporated in an **ink-jet** recording device according to Embodiment 6-2 of the invention. The recording head section is mounted on the same substrate as. . . any desired portion to the drive IC 21.

The common electrode 12 may be divided into discrete ones, forming an **electrode array**. If this is the case, the discrete

electrode 12 are made longer as shown in FIG. 57 and connected to. . .

L7 ANSWER 6 OF 45 USPATFULL
ACCESSION NUMBER: 2000:14876 USPATFULL
TITLE: Ink printing with drop separation
INVENTOR(S): Chwalek, James M., Pittsford, NY, United States
Lebens, John A., Rush, NY, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 6022099	20000208	
APPLICATION INFO.:	US 1997-787657	19970121	(8)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph
LEGAL REPRESENTATIVE: Stevens, Walter S.
NUMBER OF CLAIMS: 5
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 371
SUMM . . . receiver. The extent of ejection is claimed to be very small in
the above Cielo patents, as opposed to an "**ink jet**", contact with the paper being the primary means of printing an ink drop. This system is disadvantageous, in that a plurality of high voltages must be controlled and communicated to the **electrode array**. Also, the electric fields between neighboring electrodes interfere with one another. Further, the fields required are larger than
desired to. . .

L7 ANSWER 7 OF 45 USPATFULL
ACCESSION NUMBER: 1999:48601 USPATFULL
TITLE: Ink transfer printing apparatus with drop volume adjustment
INVENTOR(S): Lebens, John Andrew, Rush, NY, United States
Chwalek, James Michael, Pittsford, NY, United States
Bagchi, Pranab, Webster, NY, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5896155	19990420	
APPLICATION INFO.:	US 1997-808590	19970228	(8)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph
LEGAL REPRESENTATIVE: Sales, Milton S.
NUMBER OF CLAIMS: 10
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 508
SUMM . . . receiver. The extent of ejection is claimed to be very small in
the above Cielo patents, as opposed to an "**ink jet**", contact with the paper being the primary means of printing an ink drop. This system is disadvantageous, in that a plurality of high voltages must be controlled and communicated to the **electrode array**. Also, the electric fields between neighboring electrodes interfere with one another. Further, the fields required are larger than
desired to. . .

L7 ANSWER 8 OF 45 USPATFULL

ACCESSION NUMBER: 1999:27048 USPATFULL
TITLE: Electrochemical oxygen sensor
INVENTOR(S): McAleer, Jerry, Oxon, England
Ackland, Martin, Oxon, England
PATENT ASSIGNEE(S): Cranfield Biotechnology Ltd., England (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5876577	19990302	
	WO 9610174	19960404	
APPLICATION INFO.:	US 1997-809627	19970923	(8)
	WO 1995-GB2299	19950928	
		19970923	PCT 371 date
		19970923	PCT 102(e) date

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1994-19513	19940928

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Bell, Bruce F.
LEGAL REPRESENTATIVE: Beyer & Weaver, LLP
NUMBER OF CLAIMS: 9
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 289
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . Electrosensors may be disposable before maintenance becomes necessary. Miniaturisation of a sensor is facilitated. The sensors can be fabricated as micro-**electrode arrays** as disclosed in WO91/08474. The active area of the sensor may be manufactured by printing or **ink jet** methods and appropriate layers may be applied as described below so that the sensor can detect oxygen and reducible species. . .

L7 ANSWER 9 OF 45 USPATFULL
ACCESSION NUMBER: 1999:19772 USPATFULL
TITLE: Ink jet printhead with channels formed in silicon with a (110) surface orientation
INVENTOR(S): Lorenze, Jr., Robert V., Webster, NY, United States
O'Neill, James F., Penfield, NY, United States
PATENT ASSIGNEE(S): Xerox Corporation, Stamford, CT, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5870123	19990209	
APPLICATION INFO.:	US 1996-679977	19960715	(8)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph
LEGAL REPRESENTATIVE: Hutter, R.
NUMBER OF CLAIMS: 11
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 279
SUMM U.S. Pat. No. 4,047,184 discloses a charge **electrode array** for use in an **ink-jet** printing apparatus formed by anisotropic etching of aperture through a single crystal silicon substrate of (110) orientation. The array thus. . .

L7 ANSWER 10 OF 45 USPATFULL
ACCESSION NUMBER: 1998:118972 USPATFULL
TITLE: Use of multivalent inorganic cations in the electrochemical treatment of nucleic acid
INVENTOR(S): Stanley, Christopher J., St. Ives, England
Archer, Patricia L., Cambridge, England

PATENT ASSIGNEE(S): Scientific Generics Ltd., Cambridge, England (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5814450	19980929
APPLICATION INFO.:	US 7596464	19961205 (8)
RELATED APPLN. INFO.:	Division of Ser. No. 256784, filed on 18 Nov 1994, now patented, Pat. No. 5607832, issued on 4 Mar 1997	

	NUMBER	DATE
PRIORITY INFORMATION:	GB 9201481	19920123

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Horlick, Kenneth R.
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 20
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 760
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . be formed on a single surface e.g. a flat surface by any printing method such as thick film screen printing, **ink jet** printing, or by using a photo-resist followed by etching. It is also possible that the counter and reference electrodes can. . . could be the well known 96 well or Microtitre plate, it may also be a test tube or other vessel. **Electrode arrays** in Microtitre plates or other moulded or thermoformed plastic materials may be provided for multiple nucleic acid denaturation experiments.

L7 ANSWER 11 OF 45 USPATFULL
ACCESSION NUMBER: 1998:116450 USPATFULL
TITLE: Ink printing apparatus with improved heater
INVENTOR(S): Anagnostopoulos, Constantine Nicholas, Mendon, NY, United States
Sharma, Ravi, Fairport, NY, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5812159	19980922
APPLICATION INFO.:	US 6810217	19960722 (8)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Wong, Peter S.
ASSISTANT EXAMINER: Law, Patrick B.
LEGAL REPRESENTATIVE: Sales, Milton S.
NUMBER OF CLAIMS: 10
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 6 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 472
SUMM . . . receiver. The extent of ejection is claimed to be very small in the above Cielo patents, as opposed to an "**ink jet**", contact with the paper being the primary means of printing an ink drop. This system is disadvantageous, in that a plurality of high voltages must be controlled and communicated to the **electrode array**. Also, the electric fields between neighboring electrodes interfere with one another. Further, the fields required are larger than desired to. . .

L7 ANSWER 12 OF 45 USPATFULL
ACCESSION NUMBER: 1998:160378 USPATFULL

TITLE: Ink-jet printer

INVENTOR(S): Hirahara, Shuzo, Yokohama, Japan
Nagato, Hitoshi, Tokyo, Japan
Nomura, Yuko, Kawasaki, Japan
Ishii, Koichi, Kawasaki, Japan
Hosaka, Yasuo, Tokyo, Japan
Nakao, Hideyuki, Kawasaki, Japan
Murakami, Teruo, Yokohama, Japan

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Kawasaki, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5852453	19981222
APPLICATION INFO.:	US 1996-610398	19960304 (8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1995-56219	19950315

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Nguyen, Matthew
LEGAL REPRESENTATIVE: Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
NUMBER OF CLAIMS: 13
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 19 Drawing Figure(s); 16 Drawing Page(s)
LINE COUNT: 1009

SUMM To overcome these drawbacks, an **ink-jet** printing method of applying an voltage to a thin-film **electrode array** and using electrostatic force to force the ink or the coloring material component in the ink to fly from the. . . 2 that does not need the partitions of an ink passage for each dot. Here, reference numeral 1 indicates an **electrode array**, 2 a main substrate, 3 ink passages, and 4 ink droplet emitting point. Such structures help prevent and remedy the. . .

DETD FIG. 3 shows the configuration of the printing head section in an **ink-jet** printer according to the present invention. In the figure, on the surface of a main substrate 12, a main **electrode array** 11 is provided which is composed of a plurality of parallel electrodes, or strip-like electrodes, to which a printing signal. . . components in the ink to fly is applied. Above the surface of the main substrate 12 on which the main **electrode array** 11 is provided, an auxiliary substrate 14 is provided via a spacer (not shown) of nearly 300 .mu.m in thickness. . . On the inside surface of the auxiliary substrate 14, that is, the surface facing the main substrate 12, an auxiliary **electrode array** 16 composed of strip-like electrodes crossing at right angles with the main array 11 are provided. The auxiliary **electrode array** 16 causes the ink containing charged particles of the coloring material components to flow at the coloring material emitting point. . .

DETD . . . droplet emitting point 15 will be explained with reference to FIG. 5. FIG. 5 is a conceptual diagram of the **ink-jet** printer in a non-printing operation. In the figure, to explain the operation of the auxiliary electrode driver circuit 17 and. . . driver circuit 17 is controlled so as to cause a moving electric field whose phase shift retreats on the auxiliary **electrode array**, which is the complete reverse of the printing operation. Specifically, the operation of the portion to the left of the. . .

DETD A printing head applied to the **ink-jet** printer of the third embodiment is provided with a gate electrode 23 exclusively used for control of the coloring material components 19a near the ink droplet emitting outlet 18 in addition to the auxiliary **electrode array** 16 of the first and second embodiments. The gate electrode 23 is a dedicated electrode for keeping the coloring material components 19a away during a non-printing

operation of the **ink-jet** printer.

DETD When the **ink-jet** printer is in and out of printing operation, a pulse voltage similar to that in the first embodiment is applied to the individual electrodes in the auxiliary **electrode array** 16. In a printing operation, they are controlled so that the coloring material components 19a may be sent toward the. . .

DETD To carry out a normal printing operation in an **ink-jet** printing system that concentrates the coloring material components in the ink and emits and forces the ink, it is necessary to coat the main **electrode array** 11 with a thin film of ink 19 of 30.mu.m or less in thickness, or to keep the electrode wet. . .

CLM What is claimed is:

3. An **ink-jet** printer according to claim 2, wherein said holding means includes: a main substrate to which said ink is supplied; and an auxiliary substrate provided so as to face the main substrate, and said control means includes an auxiliary **electrode array** that is arranged on the auxiliary substrate and transports the coloring material components in the ink supplied onto the main. . .

4. An **ink-jet** printer according to claim 3, wherein said printing means includes: a main **electrode array** arranged on the main substrate; and main electrode driving means for supplying a predetermined voltage signal to the main **electrode array** to force ink droplets to fly from the emitting outlet; the auxiliary **electrode array** of said control means is arranged so as to cross said main **electrode array** at right angles; and said control means includes auxiliary electrode driving means for supplying a voltage signal to said auxiliary **electrode array** so that the coloring material components in the ink supplied onto said main substrate is transported to the vicinity of. . .

6. An **ink-jet** printer according to claim 5, wherein the emitting outlet is provided at the auxiliary substrate to form slits; and the main **electrode array** is arranged vertically in a staggered form with respect to the emitting outlet.

L7 ANSWER 13 OF 45 USPATFULL

ACCESSION NUMBER:	1998:139538 USPATFULL
TITLE:	Ink jet printing apparatus with controlled compression and ejection of colorants in liquid ink
INVENTOR(S):	Hirahara, Shuzo, Kanagawa, Japan Hosaka, Yasuo, Tokyo, Japan Nagato, Hitoshi, Tokyo, Japan Ishii, Koichi, Kanagawa-ken, Japan Nomura, Yuko, Kanagawa-ken, Japan Nakao, Hideyuki, Kanagawa-ken, Japan Murakami, Teruo, Kanagawa-ken, Japan
PATENT ASSIGNEE(S):	Kabushiki Kaisha Toshiba, Kawasaki, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5835113	19981110	
APPLICATION INFO.:	US 1995-532360	19950922	(8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1994-228176	19940922
	JP 1994-295246	19941129
	JP 1995-53894	19950314
	JP 1995-166622	19950630

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Hecker, Stuart N.
LEGAL REPRESENTATIVE:	Foley & Lardner
NUMBER OF CLAIMS:	80

EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 85 Drawing Figure(s); 47 Drawing Page(s)
LINE COUNT: 3145

AB An **ink jet** printing apparatus, in which the ink having colorants distributed in a solvent is supplied over the **electrode array** on the surface of the head substrate such that the **electrode array** is completely covered by the ink, while voltages are applied to the **electrode array** to produce an electric field for exerting an electrostatic force on the colorants in the ink such that the colorants are compressed and ejected toward a recording medium. Each individual electrode constituting the **electrode array** can have a tip end portion projecting from the surface of the head substrate. The apparatus also has an element. . . an element for conveying colorants in the ink through the ink supply passage toward the colorant ejection point on the **electrode array**.

SUMM In order to resolve these problems, there have been propositions for the **ink jet** printing scheme in which the ink or the colorants in the ink are ejected from an ink liquid surface by means of an electrostatic force produced by applying voltages to a thin film **electrode array**. More specifically, a scheme for ejecting the ink by means of an electrostatic attractive force has been proposed in Japanese. . .

SUMM In such an **ink jet** printing scheme for ejecting colorants by the electrostatic force, the printing head has usually been the so called edge shooter. . . into a removal channel 97. However, this printing head configuration has the electrodes exposed to the air, so that the **electrode array** is prone to damage due to an electric discharging caused by the strong electric field, and such damage makes the. . .

SUMM According to one aspect of the present invention there is provided an **ink jet** printing apparatus, comprising: a head substrate; an **electrode array** formed on a surface of the head substrate; ink supply means for supplying ink in which colorants are distributed in a solvent, over the **electrode array** on the surface of the head substrate; voltage application means for applying voltages to the **electrode array** to produce an electric field for exerting an electrostatic force on the colorants in the ink supplied over the **electrode array** by the ink supply means such that the colorants are compressed and ejected toward a recording medium.

SUMM According to another aspect of the present invention there is provided an **ink jet** printing apparatus, comprising: a head substrate having an **electrode array** formed on a surface of the head substrate over which ink having colorants distributed in a solvent is supplied; voltage application means for applying voltages to the **electrode array** to produce an electric field for exerting an electrostatic force on the colorants in the ink supplied over the **electrode array** such that the colorants are compressed and ejected from a colorant ejection point on the **electrode array** toward a recording medium; an auxiliary substrate provided over the head substrate defining an ink supply passage through which the ink is supplied over the **electrode array**; and colorant convey means, provided on a surface of the auxiliary substrate facing toward the **electrode array**, for conveying colorants in the ink through the ink supply passage toward the colorant ejection point on the **electrode array**.

ÐETD FIG. 3 shows a schematic configuration of the **ink jet** printing apparatus in this first embodiment. Here, an ink 11 is formed by a solvent with over 10.sup.-8 .omega.cm of. . . 300 .mu.m thickness. On the head substrate 12, individual electrodes 13 corresponding to recording dots and constituting a stripe shaped **electrode array** are mounted such that the ink 11 flows over the individual electrodes 13 along the ink supply passage 15 toward. . .

DETD It is noted here that, in order to realize a multi-head configuration for the **ink jet** printing scheme in which the printing is made by compressing and ejecting the colorants in the liquid ink by means. . . only at the edge portion at which the substrate is cut out; and (2) when the substrate on which the **electrode array** is formed and another substrate to be paired with that substrate are piled up in parallel with spacers inserted therebetween,. . .

DETD FIG. 39 shows a schematic configuration of the **ink jet** printing apparatus in this twenty-third embodiment, in which a plurality of parallel stripe shaped individual electrodes constituting a principal **electrode array** 13 to which the signal voltages are to be applied for the purpose of ejecting the ink 11 are arranged. . . an upper surface of the head substrate 12. It is to be noted here that the shape of the principal **electrode array** 13 is not necessarily limited to the stripe shape, and can be a matrix shape formed by a plurality of. . .

DETD FIG. 45 shows a schematic configuration of the **ink jet** printing apparatus in this twenty-fifth embodiment, where the printing head section with a portion in a vicinity of the colorant. . . ejection point 13a at the tip end of the printing head section, because this function is furnished by the auxiliary **electrode array** 61. However, in this twenty-fifth embodiment, the pump 65 is utilized for a different purpose as follows.

CLM What is claimed is:

1. An **ink jet** printing apparatus, comprising: a head substrate; an **electrode array** formed on a surface of the head substrate; ink supply means for supplying ink in which colorants are distributed in a solvent, over the **electrode array** on the surface of the head substrate; voltage application means for applying voltages to the **electrode array** to produce an electric field for exerting an electrostatic force on the colorants in the ink supplied over the **electrode array** by the ink supply means such that the colorants are compressed and ejected toward a recording medium.

61. An **ink jet** printing apparatus, comprising: a head substrate having an **electrode array** formed on a surface of the head substrate over which ink having colorants distributed in a solvent is supplied; voltage application means for applying voltages to the **electrode array** to produce an electric field for exerting an electrostatic force on the colorants in the ink supplied over the **electrode array** such that the colorants are compressed and ejected from a colorant ejection point on the **electrode array** toward a recording medium; an auxiliary substrate provided over the head substrate defining an ink supply passage through which the ink is supplied over the **electrode array**; and colorant convey means, provided on a surface of the auxiliary substrate facing toward the **electrode array**, for conveying colorants in the ink through the ink supply passage toward the colorant ejection point on the **electrode array**.

L7 ANSWER 14 OF 45 USPATFULL
ACCESSION NUMBER: 1998:128071 USPATFULL
TITLE: Electrochemical denaturation of double-stranded nucleic acid
INVENTOR(S): Stanley, Christopher J., Huntingdon, England
PATENT ASSIGNEE(S): Scientific Generics Limited, Harston, England (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5824477	19981020
APPLICATION INFO.:	US 1996-617675	19960401 (8)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1994-288231, filed on 9 Aug 1994, now patented, Pat. No. US 5527670 which is a continuation of Ser. No. US 1993-30138, filed on 12 Mar 1993, now abandoned	

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1990-19946	19900912
	GB 1991-12911	19910614
	WO 1991-GB1563	19910912

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Horlick, Kenneth R.
LEGAL REPRESENTATIVE: Townsend & Townsend & Crew LLP
NUMBER OF CLAIMS: 47
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT: 1236
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . be formed on a single surface, e.g., a flat surface by any printing method such as thick film screen printing, **ink jet** printing, or by using a photo-resist followed by etching. It is also possible that the working and reference electrodes can. . . well could be the well-known 96 well or Microtitre plate, it may also be a test tube or other vessel. **Electrode arrays** in Microtitre plates or other molded or thermoformed plastic materials may be provided for multiple nucleic acid denaturation experiments.

L7 ANSWER 15 OF 45 USPATFULL
ACCESSION NUMBER: 1998:25743 USPATFULL
TITLE: Ink printing apparatus using ink surfactants
INVENTOR(S): Sharma, Ravi, Fairport, NY, United States
Hawkins, Gilbert Allan, Mendon, NY, United States
Bagchi, Pranab, Webster, NY, United States
Clark, David Lee, Pittsford, NY, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5726693	19980310
APPLICATION INFO.:	US 1996-681233	19960722 (8)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Wong, Peter S.
ASSISTANT EXAMINER: Patel, Rajnikant B.
LEGAL REPRESENTATIVE: Sales, Milton S.
NUMBER OF CLAIMS: 16
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 25 Drawing Figure(s); 9 Drawing Page(s)
LINE COUNT: 725
SUMM . . . receiver. The extent of ejection is claimed to be very small in

the above Cielo patents, as opposed to an "**ink jet**", contact with the paper being the primary means of printing an ink drop. This system is disadvantageous, in that a plurality of high voltages must be controlled and communicated to the **electrode array**. Also, the electric fields between neighboring electrodes interfere with one another. Further, the fields required are larger than desired to. . .

L7 ANSWER 16 OF 45 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 1
ACCESSION NUMBER: 1998:477230 CAPLUS
DOCUMENT NUMBER: 129:223151
TITLE: A micromachined continuous ink jet print head for high-resolution printing
AUTHOR(S): Diepold, T.; Obermeier, E.; Berchtold, A.
CORPORATE SOURCE: Microsensor and Actuator Technology Center (MAT), Technical University of Berlin, Berlin, D-13355, Germany
SOURCE: J. Micromech. Microeng. (1998), 8(2), 144-147
CODEN: JMMIEZ; ISSN: 0960-1317
PUBLISHER: Institute of Physics Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The aim of this work was the development of an **ink jet** imaging unit for offset printing forms. A high-resoln. (1200 dpi) **ink jet** print head based on the principle of continuous **ink jet** printing is presented. Using the outstanding properties of silicon bulk micromachining this microsystem was fabricated.
It consists of a multinozzle print head, a charging **electrode array** and an array of ink shields to drain off the unused ink.

L7 ANSWER 17 OF 45 USPATFULL
ACCESSION NUMBER: 97:18058 USPATFULL
TITLE: Use of multivalent inorganic cations in the electrochemical treatment of nucletic acid containing solutions
INVENTOR(S): Stanley, Christopher J., St. Ives, England
Archer, Patricia L., Cambridge, England
PATENT ASSIGNEE(S): Scientific Generics Limited, Cambridge, England (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5607832	19970304	
	WO 9315224	19930805	
APPLICATION INFO.:	US 1994-256784	19941118	(8)
	WO 1993-GB147	19930122	
		19941118	PCT 371 date
		19941118	PCT 102(e) date

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1992-1481	19920123

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Horlick, Kenneth R.
LEGAL REPRESENTATIVE: Cushman, Darby & Cushman IP Group of Pillsbury Madison & Sutro LLP
NUMBER OF CLAIMS: 30
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 764
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . be formed on a single surface e.g. a flat surface by any printing method such as thick film screen printing, **ink jet** printing, or by using a photo-resist followed by etching. It

is also possible that the counter and reference electrodes can. . . could be the well known 96 well or Microtitre plate, it may also be a test tube or other vessel. **Electrode arrays** in Microtitre plates or other moulded or thermoformed plastic materials may be provided for multiple nucleic acid denaturation experiments.

L7 ANSWER 18 OF 45 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:541097 CAPLUS
DOCUMENT NUMBER: 125:181383
TITLE: Ink-jet recording apparatus using electrostatic force
INVENTOR(S): Hirahara, Shuzo; Nagato, Kazushi; Nakao, Hideyuki; Ishii, Koichi; Nomura, Hiroko; Hosaka, Yasuo; Murakami, Teruo
PATENT ASSIGNEE(S): Tokyo Shibaura Electric Co, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08156260	A2	19960618	JP 1994-295246	19941129

AB The **ink-jet** recording app. comprises a head substrate where an ink contg. a colorant dispersed in a solvent is supplied to, an auxiliary substrate placed in opposite to the head substrate, and an auxiliary **electrode array** on the auxiliary substrate for transporting a charged color component in the ink.

L7 ANSWER 19 OF 45 USPATFULL
ACCESSION NUMBER: 96:53187 USPATFULL
TITLE: Electrochemical denaturation of double-stranded nucleic acid
INVENTOR(S): Stanley, Christopher J., St. Ives, England
PATENT ASSIGNEE(S): Scientific Generics Limited, Cambridge, England (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5527670	19960618
APPLICATION INFO.:	US 1994-288231	19940809 (8)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1993-30138, filed on 12 Mar 1993, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1990-19946	19900912
	GB 1991-12911	19910614

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Horlick, Kenneth R.
LEGAL REPRESENTATIVE: Fisher & Associates
NUMBER OF CLAIMS: 30
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT: 1164
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . be formed on a single surface e.g. a flat surface by any printing method such as thick film screen printing, **ink jet** printing, or by using a photo-resist followed by etching. It is also possible that the working and reference electrodes can. . . could be the well known 96 well or Microtitre plate, it may also be a test tube or other vessel. **Electrode arrays** in

Microtitre plates or other moulded or thermoformed plastic materials may be provided for multiple nucleic acid denaturation experiments.

L7 ANSWER 20 OF 45 USPATFULL

ACCESSION NUMBER:	95:78623 USPATFULL
TITLE:	Thin-film transducer ink jet head
INVENTOR(S):	Hoisington, Paul A., Norwich, VT, United States Moynihan, Edward R., Plainfield, NH, United States Gailus, David W., Nashua, NH, United States
PATENT ASSIGNEE(S):	Spectra, Inc., Hanover, NH, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5446484	19950829	
APPLICATION INFO.:	US 1993-89310	19930709	(8)
DISCLAIMER DATE:	20100413		
RELATED APPLN. INFO.:	Division of Ser. No. US 1990-615893, filed on 20 Nov 1990, now patented, Pat. No. US 5265315		
DOCUMENT TYPE:	Utility		
PRIMARY EXAMINER:	Fuller, Benjamin R.		
ASSISTANT EXAMINER:	Bobb, Alrick		
LEGAL REPRESENTATIVE:	Brumbaugh, Graves, Donohue & Raymond		
NUMBER OF CLAIMS:	14		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	11 Drawing Figure(s); 3 Drawing Page(s)		
LINE COUNT:	363		

CLM What is claimed is:
14. An **ink jet** head according to claim 1 including a second **electrode array** disposed on an opposite surface of the piezoelectric film.

L7 ANSWER 21 OF 45 USPATFULL

ACCESSION NUMBER:	93:29580 USPATFULL
TITLE:	Piezoelectric transducers for ink jet systems
INVENTOR(S):	Hoisington, Paul A., Norwich, VT, United States Paulson, Bruce A., Newport, NH, United States
PATENT ASSIGNEE(S):	Spectra, Inc., Hanover, NH, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5202703	19930413	
APPLICATION INFO.:	US 1990-615898	19901120	(7)
DOCUMENT TYPE:	Utility		
PRIMARY EXAMINER:	Fuller, Benjamin R.		
ASSISTANT EXAMINER:	Bobb, Alrick		
LEGAL REPRESENTATIVE:	Brumbaugh, Graves, Donohue & Raymond		
NUMBER OF CLAIMS:	20		
EXEMPLARY CLAIM:	11		
NUMBER OF DRAWINGS:	5 Drawing Figure(s); 1 Drawing Page(s)		
LINE COUNT:	387		

DETD In an alternative embodiment shown in FIG. 5, an **ink jet** chamber 20 of the same general type shown in FIGS. 3 and 4 is provided with a piezoelectric transducer 31. . . . applied to the two sets of interdigitated electrodes 34 and 35, the side of the piezoelectric element adjacent to the **electrode array** 33 will expand, but there will be no corresponding contraction of the opposite side of the piezoelectric element. As a. . . . result, the transducer 31, being clamped at the sides of the chamber 20, will buckle in the direction toward the **electrode array** 33, as illustrated in FIG. 5, and the extent of the buckling depends on the thickness of the piezoelectric element,. . .

L7 ANSWER 22 OF 45 USPATFULL
ACCESSION NUMBER: 91:87129 USPATFULL
TITLE: Thermal edge jet drop-on-demand ink jet print head
INVENTOR(S): Eldridge, Jerome M., Los Gatos, CA, United States
Keller, Gary S., San Jose, CA, United States
Lee, Francis C., San Jose, CA, United States
Olive, Graham, Vancouver, Canada
PATENT ASSIGNEE(S): Lexmark International, Inc., Greenwich, CT, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 5059989	19911022	
APPLICATION INFO.:	US 1990-524197	19900516	(7)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph W.
LEGAL REPRESENTATIVE: Schmid, Jr., Otto
NUMBER OF CLAIMS: 5
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 14 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 325
DETD An alternate embodiment of the thermal drop-on-demand **ink jet** print head is shown in FIGS. 5 and 6 in which the conductive **electrode array** 12 is produced with discrete electrodes; however, the conductive **electrode array** 14' is produced with one electrode that is common to a plurality of heater elements 15'. In addition, the heater. . .

L7 ANSWER 23 OF 45 USPATFULL
ACCESSION NUMBER: 89:92795 USPATFULL
TITLE: Thermal-electrostatic ink jet recording apparatus
INVENTOR(S): Saito, Koichi, Kanagawa, Japan
Fujimura, Yoshihiko, Kanagawa, Japan
Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4881089	19891114	
APPLICATION INFO.:	US 1987-30332	19870326	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67304	19860327

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Shaw, Clifford C.
ASSISTANT EXAMINER: Tran, Huan
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 11 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 442
SUMM Other techniques for **ink jet** recording have been proposed to remedy shortcomings in prior methods and to make high-speed recording possible. For example, a magnetic **ink jet** method has been prepared which uses magnetic ink in conjunction with a magnetic **electrode array**. In this method, **ink-jet** states corresponding to positions of picture elements have been formed by making use of swells of the ink in the presence of a magnetic field, and letting the magnetic **ink jet** in the presence of a static electric field. This method admits of electronic scanning and, therefore, high-speed recording becomes possible, but it is still disadvantageous in that not only the selection of ink but also coloration characteristic of the **ink**

jet method is difficult.

SUMM There is also known the so-called plane **ink jet** method, which comprises arranging ink in a slitlike inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** through recording paper. Since no minute orifice for storing ink is required in this method, failure due to ink clogging can be prevented. However, high voltage applied for jetting the ink makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across the adjoining or neighboring electrodes. Consequently, the recording speed. . .

L7 ANSWER 24 OF 45 USPATFULL

ACCESSION NUMBER: 89:49974 USPATFULL
TITLE: Thermal-electrostatic ink jet recording apparatus
INVENTOR(S): Inoue, Nanao, Kanagawa, Japan
Saito, Koichi, Kanagawa, Japan
Kato, Ryoki, Kanagawa, Japan
Fujimagari, Hiroshi, Kanagawa, Japan
Fujimura, Yoshihiko, Kanagawa, Japan
Kato, Seiichi, Kanagawa, Japan
Naito, Koichi, Kanagawa, Japan
Horie, Kiyoshi, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4841312	19890620
APPLICATION INFO.:	US 1987-126125	19871127 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-280579	19861127

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Goldberg, E. A.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett, & Dunner
NUMBER OF CLAIMS: 12
EXEMPLARY CLAIM: 7
NUMBER OF DRAWINGS: 7 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 531

SUMM As means solving those problems, there has been proposed the so-called magnetic **ink jet** method in which magnetic ink is disposed in the vicinity of a magnetic **electrode array** . An ink discharge state corresponding to the image density is formed by using swell of ink due to the magnetic. . . recording sheet in an electrostatic field (Japanese Patent Unexamined Publication No. 55-69469). There has also been proposed the so-called plane **ink jet** method in which a slit-ink reservoir parallel to an **electrode array** is filled with ink, and the ink is caused to jet toward a recording sheet in accordance with an electric field pattern formed between the **electrode array** and an electrode opposed to the **electrode array** through the recording sheet (Japanese Patent Unexamined Publication No. 56-37163). Further, the so-called thermal bubble jet method has been proposed,. . .

SUMM In the application of the magnetic **ink jet** method, however, there has been a problem in that it is necessary to use a mixture of ink with magnetic. . . it is difficult to obtain a color picture by printing through superposition of ink. In the application of the plane **ink jet** method, although improvement in blockage with ink can be made because minute orifices are not necessary,

application of a high voltage is required to cause ink to jet, so that it is necessary to drive the **electrode array** in time division in order to prevent voltage leakage from occurring between adjacent electrodes. Further, in the application of the. . .

L7 ANSWER 25 OF 45 USPATFULL

ACCESSION NUMBER:	89:34839 USPATFULL
TITLE:	Continuous ink jet printer having improved stimulation waveguide construction
INVENTOR(S):	Braun, Hilarion, Xenia, OH, United States Antolik, III, Ralph E., Huber Heights, OH, United States
PATENT ASSIGNEE(S):	Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4827287	19890502	
APPLICATION INFO.:	US 1988-229534	19880808	(7)
DOCUMENT TYPE:	Utility		
PRIMARY EXAMINER:	Goldberg, E. A.		
ASSISTANT EXAMINER:	Preston, Gerald E.		
LEGAL REPRESENTATIVE:	Husser, John D.		
NUMBER OF CLAIMS:	13		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	7 Drawing Figure(s); 3 Drawing Page(s)		
LINE COUNT:	344		

SUMM One problem in attaining high quality continuous **ink jet** printing is to assure (in addition to uniform drop size and spacing) that the drop break-up points of all jet. . . occur within a given charging "window," i.e. a length range that extends along the drop stream path past the charge **electrodes array**. In forming **ink jet** arrays of substantial lengths, e.g. 6 inches or more, a number of problems evolve in attempting to achieve break-up of. . .

L7 ANSWER 26 OF 45 USPATFULL

ACCESSION NUMBER:	89:4788 USPATFULL
TITLE:	Thermal electrostatic ink-jet recording method and an ink therefor
INVENTOR(S):	Saito, Koichi, Kanagawa, Japan Akutsu, Eiichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4799068	19890117	
APPLICATION INFO.:	US 1987-59507	19870608	(7)
PRIORITY INFORMATION:	JP 1986-134439	19860610	
DOCUMENT TYPE:	Utility		
PRIMARY EXAMINER:	Goldberg, E. A.		
ASSISTANT EXAMINER:	Tran, Huan H.		
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett, & Dunner		
NUMBER OF CLAIMS:	5		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	9 Drawing Figure(s); 4 Drawing Page(s)		
LINE COUNT:	583		

SUMM To overcome such disadvantages, several kinds of **ink-**

jet recording apparatuses, for example, (1) the magnetic **ink-jet** system, (2) the plane scanning **ink-jet** system, (3) the thermal bubble **ink-jet** system, (4) the electrostatic attraction **ink-jet** system, and others, have been proposed. The first, the magnetic **ink-jet** system, employs an array of magnetic electrodes disposed at intervals corresponding to pel density. The array is driven in response. . . of ink, and an electrostatic field is applied to the meniscus to jet ink. In the second, the plane scanning **ink-jet** system, a slit-like ink reservoir is provided in parallel to an array of electrodes disposed at intervals corresponding to pel density. An electric field pattern corresponding to a pel signal is formed between the **electrode array** and an electrode disposed opposite the **electrode array** behind a recording paper. On the basis of the electric field pattern, ink is jetted from the ink reservoir. In the third, the thermal bubble **ink-jet** system, an array of heating elements is disposed at intervals corresponding to pel density so that ink is heated in. . . raise the pressure within an orifice so as to jet a drop of ink. In the fourth, the electrostatic attraction **ink-jet** system, ink is electrically attracted by an electric field created in response to an image signal. At the same time,. . .

L7 ANSWER 27 OF 45 USPATFULL

ACCESSION NUMBER:	88:52353 USPATFULL
TITLE:	Thermal-electrostatic ink jet recording apparatus
INVENTOR(S):	Saito, Koichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4764777	19880816
APPLICATION INFO.:	US 1987-30161	19870326 (7)
PRIORITY INFORMATION:	JP 1986-67307	19860327

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Goldberg, E. A.
ASSISTANT EXAMINER:	Tran, Huan H.
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS:	8
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	15 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT:	410

SUMM Other techniques have been proposed for remedying shortcomings inherent in the **ink jet** method and making high-speed recording possible. The magnetic **ink jet** method is a typical example of an alternative method and comprises arranging magnetic ink close to a magnetic **electrode array**, forming an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . .

SUMM Additionally, there is also known a so-called plane **ink jet** method, which comprises arranging ink in a slit-like inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** through recording paper. Since no minute orifice for jetting ink is required in this method, the problem of ink clogging is minimized.

However, high voltage applied for jetting the ink makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across adjoining or neighboring electrodes with the disadvantage that the. . .

L7 ANSWER 28 OF 45 USPATFULL

ACCESSION NUMBER:	88:39371 USPATFULL
TITLE:	Thermal electrostatic ink-jet recording method
INVENTOR(S):	Saito, Koichi, Kanagawa, Japan Akutsu, Eiichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Kanagawa, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4752784	19880621
APPLICATION INFO.:	US 1987-60087	19870609 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-134440	19860610

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Goldberg, E. A.
ASSISTANT EXAMINER:	Tran, Huan H.
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett & Dunner
NUMBER OF CLAIMS:	6
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	4 Drawing Figure(s); 2 Drawing Page(s)
LINE COUNT:	420

SUMM To overcome such disadvantages, several kinds of **ink-jet** recording apparatuses, for example, (1) the magnetic **ink-jet** system, (2) the plane scanning **ink-jet** system, (3) the thermal bubble **ink-jet** system, (4) the electrostatic attraction **ink-jet** system, and others, have been proposed. The first, the magnetic **ink-jet** system, employs an array of magnetic electrodes disposed at intervals corresponding to pel density. The array is driven in response. . . of ink, and an electrostatic field is applied to the meniscus to jet ink. In the second, the plane scanning **ink-jet** system, a slit-like ink reservoir is provided in parallel to an array of electrodes disposed at intervals corresponding to pel density. An electric, field pattern corresponding to a pel signal is formed between the **electrode array** and an electrode disposed opposite the **electrode array** behind a recording paper. On the basis of the electric field pattern, ink is jetted from the ink reservoir. In the third, the thermal bubble **ink-jet** system, an array of heating elements is disposed at intervals corresponding to pel density so that ink is heated in. . . raise the pressure within an orifice so as to jet a drop of ink. In the fourth, the electrostatic attraction **ink-jet** system, ink is electrically attracted by an electric field created in response to an image signal. At the same time,. . .

L7 ANSWER 29 OF 45 USPATFULL

ACCESSION NUMBER:	88:39370 USPATFULL
TITLE:	Thermal-electrostatic ink jet recording method and apparatus
INVENTOR(S):	Saito, Koichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Kanagawa, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4752783	19880621
APPLICATION INFO.:	US 1987-30438	19870326 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67301	19860327
	JP 1986-67302	19860327

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Goldberg, E. A.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett & Dunner
NUMBER OF CLAIMS: 2
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 20 Drawing Figure(s); 7 Drawing Page(s)
LINE COUNT: 457

SUMM The magnetic **ink jet** method is a typical example of such improvement, which comprises arranging magnetic ink close to a magnetic **electrode array**, forming an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . . possible, but it is still disadvantageous in that not only the selection of ink but also coloration characteristic of the **ink jet** method is difficult.

SUMM In addition to the aforesaid method, the so-called plane **ink jet** method is also well-known. This method involves arranging ink in a slitlike inkholder in parallel to an **electrode array**, and letting fly the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** through recording paper. Since no minute orifice for storing ink is required in this method, ink clogging can be prevented. However, high voltage applied for jetting the ink makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across the adjoining or neighboring electrodes; the disadvantage is that. . .

L7 ANSWER 30 OF 45 USPATFULL
ACCESSION NUMBER: 88:39369 USPATFULL
TITLE: Method and apparatus for thermal-electrostatic ink jet recording
INVENTOR(S): Saito, Koichi, Kanagawa, Japan
Fujimura, Yoshihiko, Kanagawa, Japan
Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Kanagawa, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4752782	19880621
APPLICATION INFO.:	US 1987-30439	19870326 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67305	19860327

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Goldberg, E. A.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett & Dunner
NUMBER OF CLAIMS: 5
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 11 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 395

SUMM . . . magnetic ink is an example of an alternate method. In this method magnetic ink is provided close to a magnetic **electrode**

array to form an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . .

L7 ANSWER 31 OF 45 USPATFULL
ACCESSION NUMBER: 88:37993 USPATFULL
TITLE: Thermal-electrostatic ink jet recording apparatus
INVENTOR(S): Saito, Koichi, Kanagawa, Japan
Fujimura, Yoshihiko, Kanagawa, Japan
Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4751533	19880614
APPLICATION INFO.:	US 1987-30356	19870326 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67310	19860327

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Broome, H.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS: 3
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 13 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT: 354
SUMM At the same time, there have been proposed techniques for remedying shortcomings inherent in the **ink jet** method and making high-speed recording possible. The magnetic **ink jet** method is a typical example of such improvement, which comprises arranging magnetic ink close to a magnetic **electrode array**, forming an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . .
SUMM Apart from the aforesaid methods, there is also well known the so-called plane **ink jet** method, which comprises arranging the ink in a slitlike inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** through recording paper. Since no minute orifice for storing ink is required in this method, the problem of ink clogging is minimized. However, high voltage applied for jetting the ink makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across adjoining or neighboring electrodes. Again, this disadvantage limits the. . .

L7 ANSWER 32 OF 45 USPATFULL
ACCESSION NUMBER: 88:37992 USPATFULL
TITLE: Thermal electrostatic ink-jet recording head
INVENTOR(S): Fujimura, Yoshihiko, Kanagawa, Japan
Saito, Koichi, Kanagawa, Japan
Akutsu, Eiichi, Kanagawa, Japan
Inoue, Nanao, Kanagawa, Japan
Horie, Kiyoshi, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4751532	19880614
APPLICATION INFO.:	US 1987-42305	19870424 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-94707	19860425

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph W.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson Farabow, Garrett and Dunner
NUMBER OF CLAIMS: 13
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 576

SUMM . . . possible. In one proposed technique, a magnetic field is applied to magnetic ink positioned in the vicinity of a magnetic **electrode array** to produce a meniscus on the surface of the maqnetic ink. There is produced an ink jetting condition corresponding to. . . is applied to the magnetic ink to cause the magnetic ink to jet from the recording head. Although the magnetic **ink-jet** method has an advantage in that higher-speed recording can be performed using electronic scanning, the method has a disadvantage in. . .

SUMM In another proposed technique, the plane **ink-jet** method, ink is disposed in a slit-like ink reservoir parallel to an **electrode array** and is caused to jet out in accordance with an electric field pattern formed between an **electrode array** and an electrode opposite to the **electrode array**, with recording paper interposed therebetween. Although the plane **ink-jet** method has an advantage in that a small orifice is not required and, therefore, the problem of ink clogging of the orifice is avoided, the method has a disadvantage in that a high voltage is required for making the **ink jet** . In the method, it is necessary to perform time-division driving of the **electrode array** in order to prevent voltage leakage between adjacent electrodes. As a result, in the plane **ink-jet** method, high-speed ink jetting cannot be carried out satisfactorily.

L7 ANSWER 33 OF 45 USPATFULL
ACCESSION NUMBER: 88:37991 USPATFULL
TITLE: Thermal-electrostatic ink jet recording apparatus
INVENTOR(S): Saito, Koichi, Kanagawa, Japan
Fujimura, Yoshihiko, Kanagawa, Japan
Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4751531	19880614	
APPLICATION INFO.:	US 1987-30165	19870326	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67303	19860327
	JP 1986-67309	19860327

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph W.
ASSISTANT EXAMINER: Tran, Huan H.
LEGAL REPRESENTATIVE: Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS: 6
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 12 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT: 593

SUMM The magnetic **ink jet** method is a typical example of such improvement, which comprises arranging magnetic ink close to a

magnetic **electrode array**, forming an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . .

SUMM Apart from the aforesaid method, there is also well known the so-called plane **ink jet** method, which comprises arranging ink in a slitlike inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** through recording paper. Since no minute orifice for storing ink is required in this method, ink clogging can be prevented. However, high voltage applied for jetting the ink makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across the adjoining or neighboring electrodes and prevent the recording. . .

L7 ANSWER 34 OF 45 USPATFULL

ACCESSION NUMBER:	88:34657 USPATFULL
TITLE:	Thermal electrostatic ink-jet recording apparatus
INVENTOR(S):	Inoue, Nanao, Kanagawa, Japan Saito, Koichi, Kanagawa, Japan Akutsu, Eiichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Horie, Kiyoshi, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4748458	19880531	
APPLICATION INFO.:	US 1987-44955	19870501	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-103133	19860507

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Goldberg, E. A.
ASSISTANT EXAMINER:	Tran, Huan H.
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS:	8
EXEMPLARY CLAIM:	1,2
NUMBER OF DRAWINGS:	3 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT:	324

SUMM Recently, several techniques, such as a magnetic **ink jet** method, a plane **ink jet** method, and a thermal bubble **ink jet** method, have been proposed to eliminate the aforementioned problems in order to make high-speed **ink jet** printing possible. In the magnetic **ink jet** method, a magnetic field is applied to magnetic ink provided in the vicinity of a magnetic **electrode array** to produce a meniscus in the surface of the magnetic ink and to record with a given pel density. An electrostatic field is applied to the magnetic ink to jet droplets of the magnetic ink. The magnetic **ink jet** method, however, has a disadvantage in that variable color imaging becomes difficult because of the coloration of magnetic powder contained. . .

SUMM In the plane **ink jet** method, ink disposed in a slit-like ink reservoir parallel to an **electrode array** is caused to jet in accordance with an electric field pattern formed between the **electrode array** and an array of opposite electrode. A recording paper is interposed between the two arrays. Although the plane **ink jet** method has an advantage in that a small orifice is not required and, therefore, the problem of orifice blockage due. . . a high voltage is required for causing the ink to jet. It is necessary to use time-division driving of the

electrode array in order to prevent voltage leakage between adjacent electrodes. As a result, the plane **ink jet** method is not suitable for high-speed ink jetting.

L7 ANSWER 35 OF 45 USPATFULL

ACCESSION NUMBER:	88:23122 USPATFULL
TITLE:	Thermal electrostatic ink-jet recording apparatus
INVENTOR(S):	Fujimura, Yoshihiko, Kanagawa, Japan Saito, Koichi, Kanagawa, Japan Akutsu, Eiichi, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan Horie, Kiyoshi, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4737803	19880412	
APPLICATION INFO.:	US 1987-70817	19870707	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-159713	19860709
	JP 1986-159714	19860709

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Goldberg, E. A.
ASSISTANT EXAMINER:	Tran, Hyan H.
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS:	12
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	7 Drawing Figure(s); 7 Drawing Page(s)
LINE COUNT:	706

SUMM In order to solve such problems, various structures, such as the following, have been proposed. A first system, the magnetic **ink -jet** system, provides magnetic ink in the vicinity of an array of magnetic electrodes, and ink jetting is accomplished at a. . . The magnetic ink is then jetted toward a recording sheet by use of a patterned electric field formed between the **electrode array** and an electrode disposed opposite the array on the other side of a recording sheet (Japanese Patent Unexamined Publication No.. . .

SUMM In addition to the aforesaid methods, the so-called plane **ink jet** method is also well known. This method, involves arranging ink in a slitlike inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** so that ink droplets selectively impact upon an intervening recording paper. Since no minute orifice for storing ink is required. . . prevented. However, a high voltage must be applied to jet the ink droplets which makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across the adjoining or neighboring electrodes. Consequently, the recording speed. . .

SUMM In the **ink-jet** recording systems described above, high-density recording can be made, and because electrical scanning can be carried out, high-speed recording can be achieved in most systems. However, in the magnetic **ink-jet** system, it is necessary to use ink containing magnetic powder which causes the ink to be black and makes it difficult to reproduce a color picture by superimposing several colors of ink to form an image. The plane scanning **ink-jet** system is disadvantageous in that it is necessary to apply a high voltage to jet the ink. Therefore, time division driving of the **electrode array** is required to prevent voltage leakage between adjacent electrodes. This is

unsuitable for high-speed recording. Furthermore, in the apparatus using. . .

SUMM In apparatus of this latter type, magnetic ink used in the magnetic **ink-jet** system is not required. Accordingly, not only can color imaging be easily attained by superimposing several kinds of ink during printing, but also voltage leakage in the vicinity of the **electrode array** can be effectively prevented because the extremely high intensity electric field required in the plane **ink-jet** system (in which ink is jetted only by an electrostatic field) is not required for jetting ink. Furthermore, the quantity. . .

L7 ANSWER 36 OF 45 USPATFULL

ACCESSION NUMBER:	87:83301 USPATFULL
TITLE:	Recorder with simultaneous application of thermal and electric energies
INVENTOR(S):	Saito, Koichi, Kanagawa, Japan Fujimura, Yoshihiko, Kanagawa, Japan Inoue, Nanao, Kanagawa, Japan
PATENT ASSIGNEE(S):	Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4710780	19871201
APPLICATION INFO.:	US 1987-30437	19870326 (7)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1986-67308	19860327

DOCUMENT TYPE:	Utility
PRIMARY EXAMINER:	Goldberg, E. A.
ASSISTANT EXAMINER:	Tran, Huan
LEGAL REPRESENTATIVE:	Finnegan, Henderson, Farabow, Garrett and Dunner
NUMBER OF CLAIMS:	7
EXEMPLARY CLAIM:	1,6
NUMBER OF DRAWINGS:	14 Drawing Figure(s); 6 Drawing Page(s)
LINE COUNT:	500

SUMM At the same time, there have been proposed techniques for remedying shortcomings inherent in the **ink jet** method and making high-speed recording possible. The magnetic **ink jet** method is a typical example of such improvement and is accomplished by providing magnetic ink close to a magnetic **electrode array**, forming an **ink-jet** state corresponding in position to a picture element by making use of a swell of the ink in the presence. . . this method admits of electronic scanning, high-speed recording becomes possible, however, the selection of ink and coloration characteristic of the **ink jet** method are limited.

SUMM In addition to the aforesaid methods, the so-called plane **ink jet** method is also well known. This method, involves arranging ink in a slitlike inkholder in parallel to an **electrode array**, and jetting the ink in accordance with an electric field pattern formed between an electrode facing the **electrode array** so that ink droplets selectively impact upon an intervening recording paper. Since no minute orifice for storing ink is required. . . prevented. However, a high voltage must be applied to jet the ink droplets which makes it necessary to drive the **electrode array** on a time division basis to prevent a voltage leak across the adjoining or neighboring electrodes. Consequently, the recording speed. . .

L7 ANSWER 37 OF 45 USPATFULL

ACCESSION NUMBER:	87:26775 USPATFULL
TITLE:	Ink jet printer with integral electrohydrodynamic

electrodes and nozzle plate
INVENTOR(S): Rezanka, Ivan, Pittsford, NY, United States
PATENT ASSIGNEE(S): Xerox Corporation, Stamford, CT, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	**US 4658269**	**19870414**
APPLICATION INFO.:	US 1986-869647	19860602 (6)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Goldberg, E. A.
ASSISTANT EXAMINER: Preston, Gerald E.
LEGAL REPRESENTATIVE: Chittum, Robert A.
NUMBER OF CLAIMS: 12
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Figure(s); 2 Drawing Page(s)
LINE COUNT: 661
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM U.S. Pat. No, 4,047,184 to Bassous et al discloses a charging **electrode array** for use in continuous stream type **ink jet** printers that is formed by anisotropic etching of apertures through a silicon substrate. Conductive diffusion layers in the walls of. . .

L7 ANSWER 38 OF 45 USPATFULL
ACCESSION NUMBER: 86:68438 USPATFULL
TITLE: Ink jet wet-storage system
INVENTOR(S): Piatt, Michael J., Enon, OH, United States
PATENT ASSIGNEE(S): Eastman Kodak Company, Rochester, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4626869	19861202
APPLICATION INFO.:	US 1985-722551	19850412 (6)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Goldberg, E. A.
ASSISTANT EXAMINER: Preston, Gerald E.
LEGAL REPRESENTATIVE: Husser, John D.
NUMBER OF CLAIMS: 22
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 538
CLM What is claimed is:
16. In continuous **ink jet** printing apparatus of the type having a print head assembly including an ink cavity, a multi-orifice plate, a droplet-charging plate having an array of charge electrodes, a droplet catcher formed as an extension of said **electrode array** and ink supply means for providing pressurized ink to said cavity, the improvement comprising: (a) wall means for supporting a. . .

L7 ANSWER 39 OF 45 USPATFULL
ACCESSION NUMBER: 82:60605 USPATFULL
TITLE: Ink drop charging device
INVENTOR(S): Tamai, Masayoshi, Kanagawa, Japan
Ueda, Michio, Kanagawa, Japan
Kikuchi, Masatsugu, Kanagawa, Japan
PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4364058	19821214
APPLICATION INFO.:	US 1980-191621	19800929 (6)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1979-138735	19791029
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Miller, Jr., George H.	
LEGAL REPRESENTATIVE:	Sughrue, Mion, Zinn, Macpeak & Seas	
NUMBER OF CLAIMS:	4	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	15 Drawing Figure(s); 3 Drawing Page(s)	
LINE COUNT:	241	

SUMM The charging **electrode array** is made up of a plurality of electrodes which are electrically insulated from one another. Each electrode is in the form of a tunnel so as to charge the corresponding **ink jet** and to prevent the occurrence of interference with adjacent electrodes. That is, the **ink jet** flows along the central axis of the tunnel-shaped electrode.

L7 ANSWER 40 OF 45 USPATFULL

ACCESSION NUMBER:	82:14080 USPATFULL	
TITLE:	Deflection plate array	
INVENTOR(S):	Kakeno, Sadao, Yokohama, Japan	
PATENT ASSIGNEE(S):	Ricoh Company, Ltd., Tokyo, Japan (non-U.S. corporation)	

	NUMBER	DATE	
PATENT INFORMATION:	US 4321608	19820323	
APPLICATION INFO.:	US 1980-180658	19800825	(6)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1979-112585	19790903
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Gonzales, John	
LEGAL REPRESENTATIVE:	Burgess, Ryan and Wayne	
NUMBER OF CLAIMS:	5	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	10 Drawing Figure(s); 4 Drawing Page(s)	
LINE COUNT:	275	

DETD FIGS. 1A and 1B show a print head array of an **ink-jet** printer of the type having a deflection plate array. Reference numeral 1 denotes a nozzle array; 2, a charge **electrode array**; 2a, a charge electrode; 2b, a connector for connecting the charge **electrode array** 2 to a power source or an analog-modulated charge voltage generator (not shown); 3, a deflection plate array; 3a, a. . .

L7 ANSWER 41 OF 45 USPATFULL

ACCESSION NUMBER:	81:32051 USPATFULL	
TITLE:	Ink jet printer with multiple nozzle print head and interlacing or dither means	
INVENTOR(S):	Furukawa, Tatsuya, Yokohama, Japan	
PATENT ASSIGNEE(S):	Ricoh Co., Ltd., Tokyo, Japan (non-U.S. corporation)	

	NUMBER	DATE	
PATENT INFORMATION:	US 4272771	19810609	
APPLICATION INFO.:	US 1979-75999	19790917	(6)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1978-116495	19780925
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Miller, Jr., George H.	

LEGAL REPRESENTATIVE: Burgess, Ryan and Wayne
NUMBER OF CLAIMS: 6
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 18 Drawing Figure(s); 13 Drawing Page(s)
LINE COUNT: 483
DETD . . . that the high-level outputs; that is, the print signal may be applied to the corresponding charge electrodes in the charge **electrode array** 66 so that the ink drops to be used may be charged. As with the fourth embodiment, a detection electrode.

. digital-to-analog conversion in the amplifier 73 so that the step-wave signals as shown in FIG. 14(a) may be derived. The **ink -jet** printing process described above is well known in the art and unavoidably leaves the blank columns and/or black line segments.

L7 ANSWER 42 OF 45 USPATFULL
ACCESSION NUMBER: 80:14136 USPATFULL
TITLE: Charge **electrode array** for multi-nozzle **ink jet** array
INVENTOR(S): Hoffman, Arthur R., Longmont, CO, United States
Lammers, Gerald B., Boulder, CO, United States
PATENT ASSIGNEE(S): International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 4194211	19800318	
APPLICATION INFO.:	US 1978-917144	19780619	(5)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Hartary, Joseph W.
LEGAL REPRESENTATIVE: Knearl, Homer L.
NUMBER OF CLAIMS: 19
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 372
TI Charge **electrode array** for multi-nozzle **ink jet** array
AB A charge **electrode array** for a multi-nozzle **ink jet** array is fabricated from alternate layers of stainless steel and epoxy resin. The charge **electrode array** may be formed by positioning stainless steel tabs in previously grooved nonconductive substrate such as ceramic. The grooves are spaced. . .
SUMM This invention relates to a charge **electrode array** for use with a multi-nozzle **ink jet** array and the method for fabricating the **electrode array**. More particularly the invention relates to a very rugged charge **electrode array** which is small in size for high resolution **ink jet** printing while at the same time very strong structurally to resist fracture and electro-erosion.
DETD FIG. 1 shows one embodiment of the laminated charge **electrode array** for a multi-nozzle **ink jet** array. The stainless steel layers 10, forming the charge electrodes, are mounted in

a ceramic substrate 12. The substrate 12. . . placed. The center-to-center spacing of the electrodes is substantially the same as the center-to-center spacing of the nozzles in the **ink jet** array with which the charge array would be used. The stainless steel electrodes 10 are laminated with epoxy which is. . .

DETD . . . of epoxy and stainless steel along the top 14 of the head may then be used to form the charge **electrode array**. The charging channels for the **ink jet** drops are formed in the array by gang sawing slots 16 through the tips of the electrodes 10. After the slots 16 have been cut through the electrodes 10, the

charge **electrode array** is finished except for providing electrical connection to each of the charge electrodes 10.

L7 ANSWER 43 OF 45 USPATFULL
ACCESSION NUMBER: 78:27842 USPATFULL
TITLE: Double exposure and double etch technique for producing precision parts from crystallizable photosensitive glass
INVENTOR(S): Olsen, Carlton Edward, San Jose, CA, United States
Serpa, Leroy Jasper, Campbell, CA, United States
PATENT ASSIGNEE(S): International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 4092166	19780530
APPLICATION INFO.:	US 1976-754463	19761227 (5)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Louie, Jr., Won H.
LEGAL REPRESENTATIVE: Schmid, Jr., Otto
NUMBER OF CLAIMS: 12
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 2 Drawing Page(s)
LINE COUNT: 332
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD Referring to FIG. 6 of the drawings, a charge **electrode array** 10 is shown. The charge electrode comprises a plurality of apertures 12 which extend entirely through the charge electrode for passage of a corresponding plurality of fluid or **ink jet** streams. Although only a few apertures 12 are shown, a practical device would include a large number such as from. . . of apertures 12 are provided with a conductive surface 14 to produce a plurality of charge tunnels. The plurality of **ink jet** streams are generated by a fluid jet head and caused to break into streams of uniformly sized drops by well known means (not shown). The charge electrode is positioned a distance away from the nozzle orifices so that the **ink jet** stream filaments break into the stream of uniform drops within the corresponding charge tunnels 16. The drop may thus be. . .
DETD Thus, it has been shown that our double expose-etch process is suitable for producing a precision apparatus such as an **ink jet** charge **electrode array** which would be impossible to produce using a conventional single exposure-etch process.

L7 ANSWER 44 OF 45 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 2
ACCESSION NUMBER: 1978:623955 CAPLUS
DOCUMENT NUMBER: 89:223955
TITLE: Silicon charge **electrode array** for **ink jet** printing
AUTHOR(S): Kuhn, Lawrence; Bassous, Ernest; Lane, Ramon
CORPORATE SOURCE: Thomas J. Watson Res. Cent., IBM, Yorktown Heights, N.
Y., USA
SOURCE: IEEE Trans. Electron Devices (1978), ED-25(10), 1257-60
CODEN: IETDAI; ISSN: 0018-9383
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Silicon charge **electrode array** for **ink jet** printing
AB A monolithic charge **electrode array** suitable for use in a multiple channel **ink jet** printing app. was fabricated by anisotropic etching of trapezoidal slots through a (100) oriented Si substrate. Each electrode in the array is a 3-dimensional p-n

diode formed by p+ diffusion of the surface and sidewalls of the etched slots. Elec. isolation between adjacent electrodes is achieved by appropriate biasing of the diodes. The devices are passivated by a layer of thermally grown SiO2. Printing was demonstrated with a short array.

IT Electrography
(silicon charge **electrode array** for **ink-jet** printing by)

IT Printing
(**ink-jet**, silicon charge **electrode array** for)

IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(charge **electrode array** from, for **ink-jet** printing)

L7 ANSWER 45 OF 45 USPATFULL

ACCESSION NUMBER:	77:48392 USPATFULL	
TITLE:	Charge **electrode array** and combination for **ink jet** printing and method of manufacture	
INVENTOR(S):	Bassous, Ernest, Riverdale, NY, United States Kuhn, Lawrence, Ossining, NY, United States	
PATENT ASSIGNEE(S):	International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)	
	NUMBER	DATE
PATENT INFORMATION:	US 4047184	19770906
APPLICATION INFO.:	US 1976-653168	19760128 (5)
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Hartary, Joseph W.	
LEGAL REPRESENTATIVE:	Drake, Edward S.	
NUMBER OF CLAIMS:	30	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	14 Drawing Figure(s); 5 Drawing Page(s)	
LINE COUNT:	682	

TI Charge **electrode array** and combination for **ink jet** printing and method of manufacture

AB A charge **electrode array** for use in an **ink jet** printing apparatus is formed by anisotropic etching of apertures through a single crystal silicon substrate of (110) orientation. Conductive diffusion. . . . or a metal layer to each adjacent diffusion layer. Jet nozzles and synchronization electrodes are shown incorporated in the charge **electrode array** to form a monolithic structure capable of performing a plurality of functions. Substrate contacts are also provided for biasing.

SUMM It is another object of this invention to provide a process for producing an integrated unit comprising a charge **electrode array** and **ink jet** nozzles in a single crystal silicon substrate of (110) orientation.

SUMM It is another object of this invention to provide an improved charge **electrode array** in a single crystal silicon substrate of (110) orientation for use in **ink jet** recording.

SUMM . . . are achieved by the disclosed process using single crystal silicon of (110) orientation. In this process for producing a charge **electrode array**, an n-type silicon substrate is thermally oxidized to provide a silicon dioxide layer over the entire surface, selected areas on. . . with conventional integrated circuit fabrication techniques. The integration of the charging circuit and charge electrode facilitates the packaging of the **ink jet** printing head, since the number of connections to the unit can be greatly reduced. It is understood that a p-type. . .

DETD . . . of jet streams from a multiaperture nozzle. Thus, in the embodiment of the present invention shown in FIG. 2, charge **electrode array** 17 is shown with eight apertures 18 in

an n-type substrate 23 through which the **ink jet** stream and drops are passed, although it should be understood that many more apertures may form a charge **electrode array**. In accordance with the disclosed process which will be described in greater detail below, a p+ layer 19 is formed. . .

CLM What is claimed is:

1. A charge **electrode array** in an **ink jet** recording apparatus for controlling the charge of droplets formed from a plurality of liquid streams comprising: a monocrystalline silicon substrate. . .

6. A monolithic unit in an **ink jet** recording apparatus formed of a single crystal silicon substrate of (110) orientation comprising a charge **electrode array** for causing the droplets of jet streams to be electrically charged and a plurality of membrane nozzles each of which. . .

12. A monolithic unit in an **ink jet** recording apparatus formed of a single crystal silicon substrate of (110) orientation comprising a charge **electrode array** for causing the droplets of jet streams to be electrically charged, a plurality of membrane nozzles each of which is. . .

16. A method of forming a charge **electrode array** in a single crystal substrate of (110) orientation for use in an **ink jet** recording apparatus for controlling the charging of droplets formed from a plurality of streams passing through the charge electrode apertures. . . front insulating layer on said first and second diffused regions to permit voltages to be applied for operating the charge **electrode array**.

18. A method of forming a charge **electrode array** in a single crystal silicon substrate of (110) orientation for use in an **ink jet** recording apparatus for controlling the charging of droplets formed from a plurality of liquid streams passing through the charge electrode. . . forming an oxide layer along the side walls to electrically isolate each diffused region and protect against corrosion caused by **ink jet** passage; removing the three layers in said first and second areas to the substrate surface; and placing a metallization in the first and second areas to provide electrical contacts to permit voltages to be applied for operating the charge **electrode array**.

. . . 25. A method for fabricating a monolithic unit of a plurality of charge electrodes and nozzles for use in an **ink jet** recording apparatus formed in a single crystal silicon substrate of (110) orientation comprising the steps of: forming an insulating layer. . . front insulating layer on said first and second diffused regions to permit voltages to be applied for operating the charge **electrode array**.

. . . method for fabricating a monolithic unit of a plurality of charge electrodes, nozzles and synchronization electrodes for use in an **ink jet** recording apparatus formed in a single crystal silicon substrate of (110) orientation comprising the steps of: forming an insulating layer. . . front insulating layer on said first and second diffused regions to permit voltages to be applied for operating the charge **electrode array**; and opening the second insulating layer to expose the conductive layer to permit electrical contact to be formed on the. . .

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YOU HAVE REQUESTED DATA FROM 45 ANSWERS - CONTINUE? Y/(N):y

L7 ANSWER 1 OF 45 CAPLUS COPYRIGHT 2000 ACS

TI Organic EL devices, display and manufacture

L7 ANSWER 2 OF 45 USPATFULL
TI Ink jet recording apparatus

L7 ANSWER 3 OF 45 USPATFULL
TI Magnetic sensor for ink detection

L7 ANSWER 4 OF 45 USPATFULL
TI Ink-jet head and ink-jet recording device each having a protruded-type electrode

L7 ANSWER 5 OF 45 USPATFULL
TI Ink-jet recording device having an ultrasonic generating element array

L7 ANSWER 6 OF 45 USPATFULL
TI Ink printing with drop separation

L7 ANSWER 7 OF 45 USPATFULL
TI Ink transfer printing apparatus with drop volume adjustment

L7 ANSWER 8 OF 45 USPATFULL
TI Electrochemical oxygen sensor

L7 ANSWER 9 OF 45 USPATFULL
TI Ink jet printhead with channels formed in silicon with a (110) surface orientation

L7 ANSWER 10 OF 45 USPATFULL
TI Use of multivalent inorganic cations in the electrochemical treatment of
nucleic acid

L7 ANSWER 11 OF 45 USPATFULL
TI Ink printing apparatus with improved heater

L7 ANSWER 12 OF 45 USPATFULL
TI Ink-jet printer

L7 ANSWER 13 OF 45 USPATFULL
TI Ink jet printing apparatus with controlled compression and ejection of colorants in liquid ink

L7 ANSWER 14 OF 45 USPATFULL
TI Electrochemical denaturation of double-stranded nucleic acid

L7 ANSWER 15 OF 45 USPATFULL
TI Ink printing apparatus using ink surfactants

L7 ANSWER 16 OF 45 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 1
TI A micromachined continuous ink jet print head for high-resolution printing

L7 ANSWER 17 OF 45 USPATFULL
TI Use of multivalent inorganic cations in the electrochemical treatment of
nucletic acid containing solutions

L7 ANSWER 18 OF 45 CAPLUS COPYRIGHT 2000 ACS
TI Ink-jet recording apparatus using electrostatic force

L7 ANSWER 19 OF 45 USPATFULL
TI Electrochemical denaturation of double-stranded nucleic acid

L7 ANSWER 20 OF 45 USPATFULL
TI Thin-film transducer ink jet head

ANSWER 21 OF 45 USPATFULL
TI Piezoelectric transducers for ink jet systems

L7 ANSWER 22 OF 45 USPATFULL
TI Thermal edge jet drop-on-demand ink jet print head

L7 ANSWER 23 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording apparatus

L7 ANSWER 24 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording apparatus

L7 ANSWER 25 OF 45 USPATFULL
TI Continuous ink jet printer having improved stimulation waveguide construction

L7 ANSWER 26 OF 45 USPATFULL
TI Thermal electrostatic ink-jet recording method and an ink therefor

L7 ANSWER 27 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording apparatus

L7 ANSWER 28 OF 45 USPATFULL
TI Thermal electrostatic ink-jet recording method

L7 ANSWER 29 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording method and apparatus

L7 ANSWER 30 OF 45 USPATFULL
TI Method and apparatus for thermal-electrostatic ink jet recording

L7 ANSWER 31 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording apparatus

L7 ANSWER 32 OF 45 USPATFULL
TI Thermal electrostatic ink-jet recording head

L7 ANSWER 33 OF 45 USPATFULL
TI Thermal-electrostatic ink jet recording apparatus

L7 ANSWER 34 OF 45 USPATFULL
TI Thermal electrostatic ink-jet recording apparatus

L7 ANSWER 35 OF 45 USPATFULL
TI Thermal electrostatic ink-jet recording apparatus

L7 ANSWER 36 OF 45 USPATFULL
TI Recorder with simultaneous application of thermal and electric energies

L7 ANSWER 37 OF 45 USPATFULL
TI Ink jet printer with integral electrohydrodynamic electrodes and nozzle plate

L7 ANSWER 38 OF 45 USPATFULL
TI Ink jet wet-storage system

L7 ANSWER 39 OF 45 USPATFULL
TI Ink drop charging device

L7 ANSWER 40 OF 45 USPATFULL
TI Deflection plate array

L7 ANSWER 41 OF 45 USPATFULL
TI Ink jet printer with multiple nozzle print head and interlacing or dither means

L7 ANSWER 42 OF 45 USPATFULL
TI Charge **electrode array** for multi-nozzle **ink** **jet** array

L7 ANSWER 43 OF 45 USPATFULL
TI Double exposure and double etch technique for producing precision parts from crystallizable photosensitive glass

L7 ANSWER 44 OF 45 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 2
TI Silicon charge **electrode array** for **ink** **jet** printing

L7 ANSWER 45 OF 45 USPATFULL
TI Charge **electrode array** and combination for **ink** **jet** printing and method of manufacture

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(FILE 'HOME' ENTERED AT 11:31:31 ON 06 NOV 2000)

FILE 'CAPLUS, MEDLINE, SCISEARCH, BIOSIS, USPATFULL' ENTERED AT 11:31:47 ON 06 NOV 2000

```
L1        26253 S INK JET
L2           31 S L1 AND (ELECTRODS OR MICROELECTRODE)
L3           31 DUP REM L2 (0 DUPLICATES REMOVED)
L4         4328 S L1 AND (ELECTRODE)
L5          102 S L1 AND (ELECTRODE ARRAY)
L6           47 S L1 (P) (ELECTRODE ARRAY)
L7           45 DUP REM L6 (2 DUPLICATES REMOVED)
```

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	103.09	103.24

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-3.90	-3.90

STN INTERNATIONAL LOGOFF AT 11:46:06 ON 06 NOV 2000

L3 ANSWER 10 OF 31 USPATFULL

ACCESSION NUMBER: 1998:143859 USPATFULL

TITLE: Process for the manufacture of wholly microfabricated biosensors

INVENTOR(S): Cozzette, Stephen N., Nepean, Canada
Davis, Graham, Plainsboro, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, deceased, Randall M., late of Morrisvile, PA, United States by James F. Corrigan, executor
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United States
Wieck, Henry J., Plainsboro, NJ, United States
Steiner, Susan, Trenton, NJ, United States
Itak, Jeanne, West Windsor, NJ, United States

PATENT ASSIGNEE(S): i-STAT Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5837454	19981117
APPLICATION INFO.:	US 1995-484095	19950607 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1992-943345, filed on 10 Sep 1992, now patented, Pat. No. US 5466575 which is a division of Ser. No. US 1989-432714, filed on 7 Nov 1989, now patented, Pat. No. US 5200051 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed

ACCESSION NUMBER: 1999:249048 CAPLUS
DOCUMENT NUMBER: 130:264419
TITLE: **Ink-jet** printing in manufacture of microsensor devices
INVENTOR(S): Fukushima, Hitoshi; Shimoda, Tatsuya; Morgan, Hywel
PATENT ASSIGNEE(S): Seiko Epson Corporation, Japan; The University Court of the University of Glasgow
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 908725	A1	19990414	EP 1998-307968	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2248517	AA	19990330	CA 1998-2248517	19980930
PRIORITY APPLN. INFO.:			JP 1997-266225	19970930

REFERENCE COUNT: 8
REFERENCE(S):
(1) Boeegh, P; WO 8905567 A 1989
(2) Boehringer Mannheim Gmbh; EP 0469445 A 1992
(3) Ecossensors Ltd; WO 9108474 A 1991
(5) O'Donnell-Maloney, M; GENETIC ANALYSIS: BIOMOLECULAR ENGINEERING 1996, V13(6), P151
CAPLUS
(6) Plotkin; CLINICAL CHEMISTRY 1997, V43(11), P2187
CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT
T

L3 ANSWER 21 OF 31 USPATFULL
ACCESSION NUMBER: 93:26742 USPATFULL
TITLE: Wholly microfabricated biosensors and process for the manufacture and use thereof
INVENTOR(S): Cozzette, Stephen N., Nepean, Canada
Davis, Graham, Plainsboro, NJ, United States
Itak, Jeanne A., North Brunswick, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, Randall M., Morrisville, PA, United States
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Steiner, Susan J., Trenton, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United States
Wieck, Henry J., Plainsboro, NJ, United States
PATENT ASSIGNEE(S): I-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5200051	19930406
APPLICATION INFO.:	US 1989-432714	19891107 (7)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned
DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Niebling, John
ASSISTANT EXAMINER: Bell, Bruce F.
LEGAL REPRESENTATIVE: Pennie & Edmonds
NUMBER OF CLAIMS: 51
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT: 4435
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .

SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .

SUMM 2.2.3. **INK JET** METHODS

SUMM . . . on an integrted ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A film-forming latex, ELVACE, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for an ISFET device (See, Sinsabaugh, S. L. et. al. Proceedings, Symposium on Electrochemical Sensors for Biomedical Applications, Vol. 86-14,. .

L3 ANSWER 25 OF 31 USPATFULL

ACCESSION NUMBER: 91:90615 USPATFULL

TITLE: Method of manufacturing a plurality of uniform microfabricated sensing devices having an immobilized ligand receptor

INVENTOR(S): Cozzette, Stephen N., Hightstown, NJ, United States
Davis, Graham, Plainsboro, NJ, United States
Itak, Jeanne, Hamilton, NJ, United States
Lauks, Imants R., Yardley, PA, United States
Mier, Randall M., Ottawa, Canada
Piznik, Sylvia, Jackson, NJ, United States
Smit, Nicolaas, Hightstown, NJ, United States
Steiner, Susan, Trenton, NJ, United States
Van Der Werf, Paul, Princeton Junction, NJ, United States
Wieck, Henry J., Brooklyn, NY, United States

PATENT ASSIGNEE(S): I-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5063081	19911105
APPLICATION INFO.:	US 1990-567870	19900815 (7)

RELATED APPLN. INFO.: Division of Ser. No. US 1989-432714, filed on 7 Nov 1989 which is a continuation-in-part of Ser. No. US 1989-381223, filed on 13 Jul 1989, now abandoned which is a continuation-in-part of Ser. No. US 1988-270171, filed on 14 Nov 1988, now abandoned

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Beck, Shrive
ASSISTANT EXAMINER: Owens, Terry J.
LEGAL REPRESENTATIVE: Pennie & Edmonds
NUMBER OF CLAIMS: 31
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 24 Drawing Figure(s); 18 Drawing Page(s)
LINE COUNT: 4283
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM 2.2.3 **Ink Jet** Methods

SUMM . . . of the everyday bench top variety for measuring the pH of samples, and they may sometimes take the form of **microelectrodes** suitable for implantation within the body of a subject. Such devices are presently made individually or in certain cases by. . .

SUMM . . . Morf, W. E. Studies in Analytical Chemistry, Punger, E. et al. (Eds.), Elsevier, Amsterdam (1981) p. 264; Ammann, D. Ion-Selective **Microelectrodes**, Springer (1986); Oesch, U. et al. Clin. Chem. 1986, 32. 1448; Oggenfuss, P. et al. Analytica Chim. Acta 1986, 180,. .

SUMM 2.2.3. **Ink Jet** Methods

SUMM . . . on an integrated ISFET device. A hydrophilic porous film is established over the gate on the ISFET and then an **ink jet** nozzle is used to deposit enzyme onto the film. This process utilizes spray type technology with the fluid drop being. . . from 20 to 100 micrometers. Also, published Japanese Patent Application No. 59-24244 discloses a similar membrane deposition process based on **ink jet** nozzle technology.

SUMM A film-forming latex, ELVACE, containing a potassium chloride reference solution, has been applied over a reference **microelectrode** for

L3 ANSWER 17 OF 31 USPATFULL

ACCESSION NUMBER:	93:82756 USPATFULL
TITLE:	Use of conductive sensors in diagnostic assays
INVENTOR(S):	Musho, Matthew K., Elkhart, IN, United States Noell, J. Oakey, Mishawaka, IN, United States Tse, Pius H-S., Mishawaka, IN, United States
PATENT ASSIGNEE(S):	Miles Inc., Elkhart, IN, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5250439	19931005
APPLICATION INFO.:	US 1992-990340	19921214 (7)
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DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Housel, James C.	
ASSISTANT EXAMINER:	Trembley, Theresa A.	
LEGAL REPRESENTATIVE:	Jeffers, Jerome L.	

NUMBER O

:	Process for the manufacture of wholly microfabricated biosensors
INVENTOR(S):	Cozzette, Stephen N., Nepean, Canada Davis, Graham, Plainsboro, NJ, United States Lauks, Imants R., Yardley, PA, United States Mier, Randall M., Morrisvile, PA, United States Piznik, Sylvia, Jackson, NJ, United States Smit, Nicolaas, Hightstown, NJ, United States Van Der Werf, Paul, Princeton Junction, NJ, United States Wieck, Henry J., Plainsboro, NJ, United States
PATENT ASSIGNEE(S):	i-Stat Corporation, Princeton, NJ, United States (U.S. corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 5554339	19960910
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PRIMARY EXAMINER:	Jones, W. Gary
ASSISTANT EXAMINER:	Marschel, Ardin H.
LEGAL REPRESENTATIVE:	Pennie & Edmonds
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